HEGEL'S CRITIQUE OF KANT'S PHILOSOPHY OF BIOLOGY

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April 19th, 2021

Daniel Lindquist
Hegel's Critique of Kant's Philosophy of Biology

Kant's account of teleology in the Critique of Judgement denied that we could ever have genuine knowledge of living beings; Kant demoted teleological thinking to a heuristic status (albeit a necessary one). Many of Kant's Idealist successors reacted against this skeptical move, including Goethe and Schelling. Hegel offers the best account of how to think about thoughts of living beings, and his Science of Logic and Philosophy of Nature offer many insights into how we should understand the special nature of living beings in nature and our thoughts about them. My dissertation offers an account of these insights in historical and systematic context.

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Table of Contents

Timeline of Significant Events and Writings

1784/5	Goethe -	Rereads Spinoza's Ethics systematically with Charlotte von Stein; Herder gives them a Latin copy for Christmas.
1785	Goethe -	*A Study Based on Spinoza* written, dedicated to von Stein.
1786	Goethe -	Microscopic studies in April/May.
	-	letter to Jacobi on "*scientia intuitiva*" May 3.
	-	letter to Charlotte von Stein on "essential form" of plants July 9/10.
	-	Sets off for Italian journey September 3.
	-	*An Intermaxillary Bone is Present in the Upper Jaw of Man as Well as in Animals* written (published 1820).
1788	Goethe -	Returns to Weimar from Italian journey in June.
	-	Meets Friedrich Schiller for the first time at a party on September 7.
1789	Goethe -	Composition of *Metamorphosis of Plants* begins in November.
1790	Kant -	Critique of the Power of Judgment published.
	Goethe -	*Metamorphosis of Plants* published.
		First experiments with a prism.
1791	Goethe -	*Contributions to Optics* (first part) published in spring.
1792	Goethe -	*Contributions to Optics* (second part) published in spring.
		The Experiment as Mediator between Subject and Object written.
1793	Goethe -	Letter from Lichtenberg that demolishes the third part of *Contribution to Optics*, dated October 7.
1794	Goethe -	Attends, with Schiller, Batsch's lecture on plants on July 20.
1797	Schelling -	Ideas for a Philosophy of Nature (first edition) published.
		Arrival in Jena, first meets Goethe and his circle.
1798	Schelling -	On the Worldsoul published.
1799	Schelling -	First Outline of a System of Philosophy of Nature ("*Erste Entwurf*") published.
1800	Schelling -	System of Transcendental Idealism published.
1801	Schelling -	*Presentation of My System of Philosophy* published.
	Hegel -	The Difference Between Fichte's and Schelling's Systems of Philosophy published. (six months after Schelling essay)
1800/1	Schelling-	Correspondence with Fichte about *Naturphilosophie*.
1802	Hegel -	Faith and Knowledge published in July.
	Schelling -	Installments of *Further Presentations from The System of Philosophy* published throughout late summer and fall.
	Schelling -	Revised version of Ideas for a Philosophy of Nature published. (Preface dated December 31.)
1805/6	Hegel -	First lectures on the Philosophy of Nature known to Michelet, in Jena.
1807	Hegel -	Phenomenology of Spirit published.
1810	Goethe -	*Farbehlehre* published.
1812	Hegel -	Science of Logic volume I (*Seinslogik und Wesenslogik*) published

1816	Hegel -	Science of Logic volume II (*Begriffslogik*) published
1817	Hegel -	Encyclopedia Logic first edition published
1817	Goethe -	*Zur Morphologie* published.
1819-1830	Hegel -	Regular lectures on the Philosophy of Nature, in Berlin.

List of Figures

Chapter One: Introduction

I. With What Must This Dissertation Begin?

Each of Hegel's major works begins with complaints about the fact that books of philosophy must contain prefaces and introductions, while philosophy itself can only be its own introduction. It is in keeping with Hegel's spirit that I studiously refuse to begin this dissertation in its first chapter: the dissertation proper will begin in Chapter 2, after the dissertation has already somehow gotten underway, and the unseemly business of how a work of philosophy is supposed to get started can again be brushed under the rug.

By way of external reflections on this dissertation, I will note that my original inspiration for writing a dissertation on "Hegel's Philosophy of Biology" was to write on Hegel's critique of Kant's theoretical philosophy, focusing on some methodological troubles with Kant. This is one of the more well-worn topics in the Kant-and-Hegel literature, but I thought that approaching it through the narrow lense of their respective views on the philosophy of biology would give me a novel entering wedge for discussing larger topics such as the relationship between "concepts of the understanding" and "Ideas of reason". But simply laying out Hegel's own views on these topics, as I understand them, proved to be quite a project on its own; developing the further implications of my reading of Hegel, for instance developing a fuller critique of Kant's theoretical and practical philosophies on the basis of a Hegelian view of Ideas or defending "Hegelian" views on topics in contemporary philosophy of biology, must remain tasks for future work.

The material circumstances that leaded me to an interest in Hegel's philosophy of biology are perhaps worth recording. Before I decided to go to graduate school in philosophy, I used to

have a blog (called "SOH-Dan") where I wrote about whatever had lately caught my interest, mainly philosophy; I generally attracted readers through comment thread discussions of Wittgenstein and John McDowell, though I did find some readers interested in discussing Kant and Hegel.[1] One of these readers was a Japanese fellow named Tadayasu Murai, who in 2007 emailed me some unpublished papers of McDowell's on Kant; he also pointed me to the work of Michael Thompson, with whom I was then unfamiliar, as offering "another rehabilitation of Hegel" (private conversation 2007) in his book Life and Action. This was a very happy pointer; ever since first reading it over a decade ago, I have thought Thompson's chapters on "The Representation of Life" in that work to be philosophy of the highest importance. Wanting to develop some of Thompson's ideas further (alongside McDowell's work) was my original motivation for my choice to focus on biological issues in Kant and Hegel; Thompson's influence on me will I think be plain to anyone who has read his work.

A second bit of happenstance that lead to the present dissertation was my reading of Eckart Förster's The Twenty-Five Years of Philosophy: A Systematic Reconstruction shortly after it was published in English translation in 2012. I had heard high praise for Förster's book ever since it was published in German in early 2011, and had looked forward to the English translation that I had heard would be soon forthcoming. Förster's book is one of the few books (along with Wittgenstein's Philosophical Investigations) that I literally found myself unable to

[1]Oddly, these readers somehow included Slavoj Žižek, who spends several pages of his 2012 tome Less Than Nothing (Žižek 286-292) discussing a post of mine from 2007 titled "Christianity and the Terror, or: more Zizek-Bashing" (Lindquist 2007). To this day I have no clue how Žižek came across this post, which according to my Google Analytics data (from before the book came out) had less than a hundred views. To the best of my knowledge, Žižek only read this one post with his name in it; I have never received any replies to my later posts trying to figure out how he found it, or replying to his criticisms of this ancient post.

put down; I read nothing else once I had started it until I had finished the entire book from cover to cover. Wanting to share my love for the book, I blogged a bit about how good it was, and also about some features I was critical of. One of my readers, a fellow named Daniel Nagase, said he had enjoyed these posts and wondered if I "intended to resume" (private conversation 2013) my posts on Förster; I told him that I thought I had said what I had to say that was critical, and didn't see the point in cheerleading any more than I already had for the work. But it so happened that I needed to write a qualifying paper around this time, and Nagase's question struck me with inspiration: Why not cheerlead (critically) for Förster for my qualifying paper? This qualifying paper then developed into Chapter 4 of the present dissertation. I had originally planned on organizing the full dissertation more narrowly along the lines of Förster's work, thematizing the distinction he noted between "intellectual intuition" and "intuitive understanding" as a way to provide a backbone for my work, but as I began to work this out in the single case of Kant's and Hegel's views of how inquiry into living nature functions, this architectonic device was dropped due to being less helpful than I had hoped.

What follows is a relatively straightforward exposition of Hegel's philosophy of biology, as I understand it. I begin by laying out my reading of the section on "Life" in Hegel's Science of Logic, which (following James Kreines) I take to be central to understanding Hegel on this topic, along with the material in Kant I take Hegel to have been responding to. I then go into some historical background that sheds light on where Hegel was coming from in the way he thought about these topics, focusing on his romantic contemporaries Goethe and Schelling. Hegel's fullest discussion of biological topics naturally comes in his Philosophy of Nature, which I take up in its own right only in my final chapter. A more detailed description of each chapter follows.

II. Guide to the Following Chapters

In my second chapter, I lay the groundwork for discussing Hegel's view on what makes thoughts of living nature distinctive by discussing Kant's views on this topic, in his Critique of the Power of Judgment. Hegel praised Kant's discussion in this work, especially his distinction between "external and internal purposiveness" which he claimed "opened up the Concept of life, the Idea, and by so doing has done *positively* for philosophy what the *Critique of Reason* did but imperfectly, equivocally, and only *negatively*". (WdL 737) But Kant in the third Critique leaves his reader with a skepticism concerning our knowledge of living nature as living: biological knowledge is for Kant something second-rate compared to the knowledge made available by Newtonian physics. I present a reading of the section on "Life" in Hegel's Science of Logic, which is the first section in the chapter on "The Idea", that shows Hegel carefully developing Kant's own account of our knowledge of living nature as "internally purposive" without Kant's skeptical conclusions. The first two parts of the section on "Life", as I explicate them, concern the holistic structure of living beings as consisting of members (and not mere parts, as though organisms were aggregates) and the special way in which living beings relate to their environments. James Kreines's essay "The Logic of Life" is in my view the best existing work on this specific topic in Kant and Hegel, and I begin my critical engagement with Kreines's work in this chapter. Some of the material in this chapter has been reworked for an article published in *History and Philosophy of Science* volume 8, issue 2, "Hegel's 'Idea of Life' and Internal Purposiveness".

In my third chapter, I lay out my novel reading of the third part of the section on "Life", concerning what Hegel calls "the genus-process". I argue against all existing readings of this

material, which have tended to saddle Hegel with the implication that living beings as such must reproduce themselves over generations in order to be alive at all. This view is inconsistent with the reality of spontaneous generation, which Hegel affirms as an empirical fact in his Philosophy of Nature, but which also raises puzzles about how there could be a first living being and about whether it could be proper for Hegel to raise such issues in a work on logic. James Kreines's reading of the genus-process comes in for special critique in this chapter, though his more detailed account is in line with the general readings put forward by philosophers such as Charles Taylor and Stephen Houlgate. This chapter also contains my account of Hegel's metaphor of the "impotence of nature", which I use to playfully develop a preliminary account of the way Hegel thinks of the relationship between nature and spirit, and closes with my anti-Platonistic reading of Hegel on taxonomy. This and the previous chapter contain my account of the narrowly logical material relevant to understanding Hegel's philosophy of biology.

In my fourth chapter, which contains some of the oldest material in the dissertation, I discuss Eckart Förster's views of Kant, Hegel, and Goethe in his The Twenty-Five Years of Philosophy. Throughout my dissertation I follow Förster in taking the distinction between "intellectual intuition" and "intuitive understanding" as crucially important for making sense of the way the post-Kantians developed their views from out of Kant. Where Kant had opposed the human mind, possessing a discursive intellect and a sensible intuition, to the divine mind, possessing an intuitive intellect and an intellectual intuition, Förster shows that there is conceptual space for thinking that our mindedness in fact includes more than Kant had allowed for, even while granting that we lack the sort of mind that Kant held a Creator-God would possess. The conceptual distinctions Förster draws in these quarters are very productive in his

book for developing the views of Fichte, Schelling, Goethe, and Hegel – but Goethe is clearly his favorite of these four, and the one he spends the most time championing. Chapter 11 of his book is titled "The Methodology of the Intuitive Understanding" and is devoted to laying out a method for philosophical and empirical inquiry which Förster thinks holds enormous promise; I argue that his account fails to present us with a method that can do the work he wants it to do. But Förster has done great service in championing Goethe's significance to the story of German Idealism, and I spend a significant portion of this chapter offering an alternative account of how to understand this significance (drawing heavily on the work of Robert Richards in his The Romantic Conception of Life in doing so). The most important distinction between my approach to Goethe and Förster's is that Förster centers Goethe's optical work, treating morphology merely as an additional example of the general method Goethe developed, while I center morphology for the appreciation of Goethe, and emphasize that the peculiar nature of inquiry into living nature is what makes Goethe's special approach so valuable in this area.

In my fifth chapter, I discuss the work of Schelling, focusing only on a specific aspect of his critique of Kant that I think is well-observed: the discussion of the "dogmatist" in the Introduction to Schelling's Ideas for a Philosophy of Nature. In minimizing the importance of Schelling for understanding the development of philosophy from Kant to Hegel, I am also following Förster, who downplays the importance of Schelling in his Twenty-Five Years. But Schelling is certainly of historical importance for understanding at least the development of Hegel's philosophy of biology; in this chapter I engage with Anton Kabeshkin's recent article "Schelling on Understanding Organisms" to lay out the Schellingian background that Hegel later reacted strongly against. I also discuss why I do not think Schelling followed out his own best

insights in the way he later developed his own philosophies, after the promising start in the Introduction to the Ideas, before turning to Hegel's early works from the Critical Journal he produced with Schelling: the *Differenzschrift* and *Faith and Knowledge*. My readings of both of these works is heavily influenced by Förster's emphasis on the importance of distinguishing between "intellectual intuition" and "intuitive understanding" when reading the German Idealists; I show that Hegel was careful not to conflate these two even when he was still working alongside Schelling, and that Hegel's enthusiasm for Kant's "internal purposiveness" goes back to his earliest writings on nature. I also show in this chapter that Schelling did not use the expressions "intellectual intuition" and "intuitive intellect" in the same way that Hegel did; their divergence is thus also already present by the time Hegel first is writing about nature. This chapter closes with some remarks about the material relevant to the philosophy of biology in Hegel's Phenomenology of Spirit, which is mostly scattered and underdeveloped but highly suggestive. An exception to this is the curious fact that Hegel's deepest and most extended discussion of "laws of nature" is actually present in the Phenomenology; I therefore go into this topic in some greater depth here. This and the previous chapter contain my account of the historical materials relevant to understanding Hegel's philosophy of biology.

In my sixth and final chapter, I close my dissertation by giving a high-altitude discussion of Hegel's Philosophy of Nature proper. I am critical in this chapter both of the relatively recent account given by Stephen Houlgate in his Introduction to Hegel and of the original preface that Karl Michelet appended to the work when it was first published. Both of these authors are criticized for unduly assimilating Hegel's Philosophy of Nature to Schelling's work under the same name, despite the consistent and strongly-voiced criticism of Schellingian

Naturphilosophie in Hegel's mature work. My reading of Hegel, in contrast to these Schelling-friendly readings, belongs with the so-called "non-metaphysical" readers of Hegel, like Robert Pippin and John McDowell, which makes my contribution especially novel, given that these sorts of readers have tended to distance themselves from Hegel's work on the natural sciences. Terry Pinkard is an exception that proves the rule in this respect; I discuss his critical account of Hegel's Philosophy of Nature in the opening chapter of his book Hegel's Naturalism to set up my own reading. As I read the Philosophy of Nature, the Janus-faced way in which nature confronts us is central to Hegel's concerns: how can nature be both the alien realm the natural sciences disclose to us and that in which we live and move and have our being? Though much of the details of Hegel's Philosophy of Nature seem irrelevant to such an existential question, I think that this motivation is the living soul of the work. Hegel himself raises this cluster of issues in the book's Introduction: given that nature is just what thought has to work to come to grips with, and that we ourselves must work to come to grips with ourselves, how are we to think of nature and the ways in which we comprehend it? In addition to arguing that this way of approaching the text provides a useful way of thinking of the "Idea of Nature", I also defend the continuing relevance of Hegel's discussion of biological topics in this work (owing significantly to his reliance on Cuvier), against Pinkard's charge that Darwin has rendered Hegel's discussion obsolete.

A pair of brief appendices to the dissertation as a whole are in a similar vein as the final chapter: I mention some underdiscussed areas where I hold Hegel's view of nature to be indefensible, namely the positioning of geological topics in the "Organics" and the dualism of plant and animal Hegel works with, and then defend the compatibility of what is vital in Hegel's thoughts on life with post-Darwinian biology. A master bibliography follows the dissertation as a

whole.

III. Acknowledgments

As I bring this dissertation to a close, I would like to thank some fragment of those to whom thanks is due. I will list them alphabetically, to spare myself the burden of finding some way to intelligibly order them: Colin Allen; Karl Ameriks; audiences at Indiana University, Lehigh University, the Society for German Idealism and Romanticism, and the University of Sydney; Arnold Brooks; Medea Castko; Gary Ebbs; Zachary Ferrell; Stephen Green; Anton Kabeshkin; Ryan Ketcham; my cousin Jeff Lindquist; my parents Philip and Deborah Lindquist; Elisabeth Lloyd; Dave Maier; my grandmother Delores Maddox and grandfather Donald Maddox; Tadayasu Mirai; Sandra Shapshay; Curtis Sommerlatte; Colin Street; Allen Wood; Shane Zappettini. I would also like to dedicate the dissertation as a whole to my mentor, Elisabeth Lloyd: without whom not.

Chapter Two: The Judgement of Life

I. Introduction

Our experience of living objects in nature, both in common life and in the life sciences, shows them to be remarkable objects: there is clearly something special about them. Kant's theoretical philosophy purports to give us an analysis of what is special about living nature, but it also raises a problem for any claims we might make to knowledge of it *as* special in the way we seem to experience it as being. Artifacts, such as watches, have their purposive functions because of the will of their maker; Kant calls this type of purpose *external purposiveness* (*äußere Zweckmäßigkeit*), as the purposive functioning is put into the object from outside of it. What is apparently special about living nature is that it seems to develop purposive activities and structures from out of itself, without the need for anything like a watchmaker. Kant calls this "internal purposiveness" (*innere Zweckmäßigkeit*), and the natural beings which exhibit it "natural ends" (*Naturzwecke*). According to Kant's logical analysis of the concept of a "natural end" in the second half of the Critique of the Power of Judgment ("the Critique of Teleology" in what follows), natural ends are wholes in which each part is reciprocally both means and end to all of their other parts. Another way Kant puts this is that in a natural end the parts are made possible only by the whole.

But from the results of his logical analysis Kant raises an antinomy for judgement[2]: we are told in Kant's philosophy of physics that the parts of any natural being we can come to know

[2]See (KdU 251ff, 5:385ff). Citations from Kant include AK pagination, as is standard. Citations from Kant and Hegel are from the works in the bibliography, translations amended where noted.

are always made of matter, formed by the interplay of attractive and repulsive forces.[3] Because the parts of all natural things are made of matter, wholes in nature must always be mere aggregates of matter, formed by what Kant calls a "mechanical kind of generation"[4]. Wholes in nature are thus made possible through the combinations of antecedently existing, and antecedently intelligible, parcels of matter, which are pushed together (or pulled apart) by forces. But this means that no whole in nature can make its parts originally possible: any whole which is *mechanically* produced, by accumulating matter into a common shape, has for its parts things which existed before it. These parts originally existed[5] without being parts of *this* particular mechanically-generated whole.

So, thinking along with Kant, we reach a contradiction if we try to claim *knowledge* of the existence of a natural end, of an internally purposive being in nature: such a being would have to be a whole whose parts both *were* possible without being parts of that whole and *were*

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[3]Kant argues for this initially in the "Analogies of Experience" in the first Critique, then more fully in Metaphysical Foundations of Natural Science. The details of Kant's handling of causal concepts is beyond the scope of this dissertation, but it was something Hegel thought seriously about. The notion of causation at work in Kant's "Analogies" is the topic of Hegel's sections "The Relation of Causality" and "Reciprocity", the final sections of The Science of Logic before the transition to its ultimate part, "The Doctrine of the Concept". Sublating Kant's conception of causality is thus one of the main tasks of Hegel's "Doctrine of Essence", especially its lengthy chapter on "Ground". Working out the consequences of this sublation is illuminating for some aspects of Hegel's Philosophy of Nature, whose first part includes a perceptive discussion of Kant's Metaphysical Foundations. Sebastian Rand's dissertation is the best existing work on this subject; see (Rand 2006).

[4]See (KdU 278, 5:408) and *passim*.

[5]At least in a logical sense. Supposing God initially created matter in a particular arrangement, as Newton believed, there were parts of material aggregates which did not pre-exist the wholes of which they were parts. But these parts could have been created in a different arrangement, and so I say they *logically* or *originally* exist prior to any particular arrangement: any such arrangement is contingent for them.

not possible without being parts of that whole. Kant's solution to this antinomy, similar to others in his theoretical philosophy, is to restrict our ability to claim knowledge of nature: we cannot know of anything in nature that it is internally purposive, regarded solely as it is given to us in experience. If we hold anything in nature to be internally purposive, Kant holds we can only think this through the relation of nature to something "supersensible",[6] and this is to think of natural objects in a way which exceeds anything we can know of nature. But precisely because these "supersensible" grounds are beyond the limits of what we can know of nature, they are also beyond the domain where we are required to say that the parts of all natural beings are matter, and that all wholes in nature are merely aggregated parcels of matter.

But there is something dissatisfying in Kant's resolution to his antinomy. The idea of a *natural end* seemed to articulate what is special about the internally purposive parts of living nature, certain objects of our experience. What Kant's analysis seemed to tell us was that here our experience presented us with a being whose parts were means and ends of each other, whose parts were made possible only by the whole organized system of parts. But if we can only coherently think of this concept as applying to a *natural* being while it is thought of in relation to a *supersensible* ground of nature, it seems that we have lost any right to claim that a natural end is *natural*, a special kind of object given to us in experience: Kant seems to make room for inner purposiveness in nature only by removing it from the objects of experience considered just as our experience presents them to us. Instead, as with the external purposiveness of artifacts, purpose is nature is secured only through something beyond nature and alien to it – and alien also to all possible experience, and so alien to our knowledge.

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[6]See (KdU 250, 5:378) and *passim*.

To try to clearly articulate how this dissatisfaction arises, I will look at the details of Kant's view in light of a kind of inconsistent triad. There are three facts about Kant's philosophy of nature which are mutually unsatisfying to someone who looks to Kant for an understanding of living nature, though we can hold on to any two of them:

1. Kant tells us he will provide us with a principle for judging about inner purposes in nature – the **Analytical Burden**.
2. The principle Kant in fact gives us tells us that inner purposes are those whose parts are made possible only by their wholes – **Organic Holism**.
3. Kant tells us that in nature wholes are always made possible by their parts, and not vice-versa – **Material Reductivism**.

We can accept the Analytical Burden and Material Reductivism, but then the principle of Organic Holism will not be one we can actually use to know natural ends. This conflicts with what was initially attractive about Kant's analysis, that it was supposed to tell us what was special about the living nature we encounter in life. Kant here leaves us with a skepticism about inner purposiveness, consigns us to ignorance about a class of objects we experience.

We can accept the Analytical Burden and Organic Holism, but we cannot use the principle of Organic Holism to extend our knowledge of nature without rejecting Material Reductivism. But it is only by reconciling the concept of an inner purpose with our picture of nature in general, which for Kant is the picture of Newtonian physics, that we can be satisfied that our concept of a natural end actually enables us to know anything special *in nature* – that we can coherently hold on to the idea that all possible experiences we can have admit of unification into a system of nature. We would be left needing a way to reconcile the Newtonian picture of

nature with the existence of natural ends if we simply rejected Material Reductivism.[7]

We can also accept Organic Holism and Material Reductivism, but then the conjunction of these seems to prove to us, by an easy *reductio*, that in nature there is really no inner purposiveness at all. Kant is able to avoid this (nihilistic, Spinozistic) conclusion only by restricting the principle of Organic Holism to a merely regulative use, holding us back from saying it tells us how any natural being is actually constituted. If we instead try to hold on to the conjunction of Organic Holism and Material Reductivism, we will have to give up the thought that experience presents us with genuinely special sorts of objects in our experience of living nature – that we really do experience anything to which the principle of Organic Holism applies.

If we come to Kant wanting to know how it is possible that we can know parts of nature to be internally purposive in the way experience seems to present them as being, then Kant ends up giving us less than we had wanted. Many of Kant's successors clearly felt this dissatisfaction; Schelling, Goethe, and the romantics can all be seen as trying to rethink these issues while avoiding both Spinozistic nihilism and Kant's skeptical conclusions. But I will focus on Hegel, for I think he understood Kant most deeply.

II. Why Hegel?

In his article "The Logic of Life: Hegel's Philosophical Defense of Teleological Explanation of Living Beings", James Kreines argues that Hegel's views on teleological explanation were developed to respond to Kant's skepticism regarding "teleological explanations of living beings. Hegel responds that Kant should instead defend such explanation – and that the

[7]As we will see in my final chapter, Hegel offered a way to position the Newtonian view of nature as governed by laws within a broader and more diversified account of nature as a whole.

defense of teleology should have lead Kant to different conclusions throughout his theoretical philosophy." (Kreines 2008 344-5) These general interpretive claims are common among scholars of German Idealism,[8] but the existing literature has not exhibited Hegel's reasoning satisfactorily. Kreines represents this literature at its best, and he discusses the details of Hegel with a keener eye than many other commentators, but in his article he still does not see a way to actually defend Hegel against Kant in any conclusive way: "I think that both Kant and Hegel provide compelling arguments whose real philosophical force is easy to miss. So I do not aim here to decide the issue between them, but to uncover and explain the arguments." (Kreines 2008 347) Kreines concludes the paper with the modest claim that "when it comes to the topic of teleology and biology, Kant and Hegel provide arguments that bear on underlying philosophical issues of continuing interest and importance." (Kreines 2008 377) Kreines's 2015 book maintains this neutral stance while discussing the specific issue of teleology; he there concludes his chapter on "Hegel's Defense of Natural Teleology" by merely claiming that "just as with Kant, Hegel's view has not been shown to be outdated, but is an alternative to currently popular views." (Kreines 2015 109)[9]

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[8]See (Dahlstrom 1998), (Förster 2012), (Hahn 2007), (Rand 2010), (Sedgwick 2012).

[9]Elsewhere in this book, Kreines argues for the relative superiority of Hegel over Kant on "metaphysical" grounds concerning what he calls "complete reasons"; Kreines's exposition is in conversation with contemporary analytic metaphysics. But even in this discussion, Kreines wants to end up not choosing between Kant and Hegel: as he states in the close of his book's introduction, "I seek to understand how there can be powerful arguments on both sides of a fruitful philosophical disagreement extending all the way to questions about the orientation of philosophy itself. I do not attempt here any exhaustive or decisive calculation of costs and benefits of Hegel's positions as compared with Kant's." (Kreines 2015 30) As a participant in debates in analytic metaphysics, Kreines's positioning makes good sense: the game there is to develop different sorts of views, multiplying arguments and positions, not resolving questions and moving on from them. In contrast, I want to argue that Kant's views here are

But we can do better than this; philosophy does not need to stop at the exhibition of metaphysical views, but can resolve disputes between them. The kind of "philosophical" modesty Kreines aims at is something Hegel had already set his face against in the entertaining polemic with which his *Differenzschrift* opens:

> An age which has so many philosophical systems lying behind it in its past must apparently arrive at the same indifference which life acquires after it has tried all forms.... Individuality becomes fossilized and no longer ventures out into life.... [The individual] refuses the living participation demanded by science, transforming it into mere information, keeping it at a distance and in purely objective shape.... If indifference of this sort escalates into curiosity, it may believe nothing to be more vital than giving a name to a newly developed philosophy, expressing dominion over it by finding a name for it, just as Adam showed his dominion over the animals by giving names to them. In this way philosophy is transposed to the plane of information. Information is concerned with alien objects. In the philosophical knowledge that is only erudition, the inward totality does not bestir itself, and neutrality retains its perfect freedom.... As appearance, philosophy surrenders to the power capable of transforming it into dead opinion and into something that belonged to the past from the very beginning.... The collector stands firm in his neutral attitude towards truth; he preserves his independence whether he accepts opinions, rejects them, or abstains from decisions. He can give philosophical systems only one relation to himself: they are opinions – and such incidental things as opinions can do him no harm. He has not learned that there is truth to be had. (85-86)

Kreines thus reads Hegel in a deeply un-Hegelian fashion: his goal is to exhibit Hegel's views,

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undermotivated, based on uncareful analysis, and neglect relevant aspects of the evidence he considers; Hegel does a better job on all these counts. If I fail to show that Kant's views should be rejected, and Hegel's seen as superior to them, I will not have done the job of a philosophical expositor adequately. The promise in German Idealism did not lay in its developing "fruitful philosophical disagreements", but in the chance that it might have actually gotten some things right that are hard to get right.

lay them open for inspection, but ultimately abstain from saying whether he or his reader should think these things are true or not. Insofar as Kreines defends Hegel from objections, this is done not to show the truth of Hegel's views, but to maintain them as possible objects of consideration, thoughts we might entertain, roll around in our heads, and then set back down besides the views of Kant and others, now satisfied that we have in fact come to see how clever and interesting Hegel really was. This is to work as a sort of museum curator for philosophical ideas; Hegel refers to the collector as having in this collection of philosophies a "collection of mummies" (*Differenzschrift* 86). For Hegel it is a symptom of a deeply unphilosophical age that the production of artfully cataloged mummy-collections is taken to be what philosophy consists in, or how the history of philosophy should operate; instead, Hegel always sought to exhibit the "ever young" (EL 17) basic import of philosophy as being what is at work in its history, and constantly urges his students and readers to dare to put themselves at risk in grappling with philosophy.

If, as readers of Hegel, we attempt to exhibit his thought without casting judgment on what exactly he got right and what he got wrong, we do him a disservice. Kant famously wrote that in an age of enlightenment, the motto is "*Sapere aude!* Have courage to make use of your *own* understanding!" (PP 17, 8:35) Hegel paid Kant this enlightened service: he productively developed Kant's views on teleology not by simply disagreeing with him, offering theses to rival Kant's own theses, but by using his own understanding to see where Kant went wrong and to produce an improved successor account.

I think Hegel makes a powerful case for Kant having made what (following Hegel, but contrary to much contemporary usage) we should call *logical* errors which lead to his

unsatisfying metaphysical conclusions: a failure to properly distinguish distinct types of thoughts lead Kant into error. Specifically, I read Hegel, in the discussion of the "Idea of Life" in the Science of Logic, as proceeding through Kant's own thinking more carefully than Kant had.[10] Where Kant's development of his concept of a "natural end" ended up providing us with a concept which he found we cannot actually use in knowing nature, Hegel proceeds more carefully and is able to claim *genuine knowledge* of life as manifesting internally purposive natural activity. Hegel is able to achieve this precisely by paying attention to facts which Kant himself had already mentioned, but then failed to pay adequate attention to. So to understand Hegel's improvement on Kant, it is best to proceed again through Kant's own conceptual development in the "Analytic" of the second half of the third Critique.

III. "External" Purposiveness

Our interest in the "Analytic of the Teleological Power of Judgment" lies in how Kant develops his concepts of *internal purposiveness* and of a *natural end*. Kant builds to these gradually, in steps, by first considering notions which he wants to distinguish from these. So, following Kant, we will first look at the notion of *external* purposiveness.

Kant initially glosses "external purposivness" as being "advantageousness of one thing for another" (KdU 241, 5:368). This is a superficial gloss, to be replaced with a better

[10]It has often been noted by Hegel's readers that the idea that "life" belongs in a discussion of logic can seem very strange – ""Life" is an unusual category to meet in contemporary logic" (Maybee 509); "At first it could seem that the topic of life is out of place in a work on logic." (Rosen 467); "Among the many scandalous features of Hegel's table, or 'system' of logical categories, we would nowadays want, I think, to accord high rank to this, that he finds a place for the concept of *life* on it." (Thompson 2008 25) The discussion of life is not a part of logic for Kant, but is an entirely empirical concept. Part of the burden of this chapter, and of this dissertation as a whole, is to show how attention to the special character of thoughts about the living warrants our calling "life", with Hegel, a distinctive *logical* category.

understanding of what is at issue, but Kant has a reason for starting with this broad kind of "purposive relationship". His continued analysis will reveal it is really not a kind of purposiveness presented to us by experience, but is something we naturally confound with a more specific purposive relationship which does appear to be presented to us by experience. He introduces this kind of "purposive relationship" by discussing "the Greenlander, the Lapp, the Samoyed, the Yakut, etc." – people who live in the icy climes of the far North. Kant notes that it is surprising that people are able to live in this climate at all, which seems at first so inhospitable to human life. There is a temptation to see these remarkable cultures as calling for a remarkable kind of explanation: an appeal to a providential order which has organized this apparently inhospitable nature so as to make it capable of sustaining human life:

> In cold lands the snow protects the seeds from frost; it facilitates communication among humans (by means of sleds); the Laplanders find animals there that bring about this communication (reindeer), which find adequate nourishment in a sparse moss, which they must even scrape out from under the snow, and yet are easily tamed and readily deprived of the freedom in which they otherwise maintain themselves quite well. For other peoples in the same icy regions the sea contains a rich supply of animals which, even beyond the nourishment and clothing which they provide and the wood which the sea as it were washes up for them for houses, also supplies them with fuel for warming their huts. Now here is an admirable confluence of so many relations of nature for one end: and this [end] is the Greenlander, the Lapp, the Samoyed, the Yakut, etc. But one does not see why human beings had to live there at all. Thus to say that moisture falls from the air in the form of snow, that the sea has its currents which float the wood that has grown in warmer lands there, and that the great sea animals filled with oil exist **because** the cause that produces all these natural products is grounded in the idea of an advantage for certain miserable creatures *would be a very bold and arbitrary judgement*. For even if all of this natural usefulness did not exist, we would find nothing lacking in this state of things for

> the adequacy of natural causes; rather, even merely to demand such a predisposition and to expect such an end of nature would seem to us *presumptuous and ill-considered* (for only the greatest incompatibility among human beings could have forced them into such inhospitable regions). (KdU 241, 5:369, my italics)

In this example Kant draws our attention to some relations between Laplanders and their environment which can seem strikingly fortunate for the Laplanders. The Laplanders need seeds to be protected from frost, and the snow does this; the Laplanders need wood to build their homes with, and this floats in on sea currents; the Laplanders need oil to warm themselves with, and whales provide vast stores of it. These advantages are what make it possible for Laplanders to live in the arctic at all; they make use of these advantages in order to preserve themselves. This seems to justify a kind of teleological description of the part of nature that the Laplanders inhabit: nature provides them with the means which they use to survive, those means are there *in order to be used* by the Laplanders.

But, as Kant says, to think in this way would be "a very bold and arbitrary judgment". In making such a judgment, we represent these natural phenomena as "grounded in the idea of an advantage for certain miserable creatures", as being put there by a providential force that is caring for the Laplander's continued existence. But Kant thinks that we can easily see a problem with such a move: it is merely a historical accident that the arctic has people in it at all; as Kant says, they are there because they were "forced to live so far north". But even if there were no Laplanders, the northern regions of Finland and Sweden would still have their usual snow, sea currents, and wildlife. In that case no purposive relationships would seem to exist between humanity and that portion of the globe, but the same natural phenomena would have come into being there anyway: "even if all of this natural usefulness did not exist, we would find nothing

lacking in this state of affairs for the adequacy of natural causes". So it seems that the appearance of a purposive relation which we described when mentioning the usefulness of snow, driftwood, and whales to the Laplanders is really illusory. This usefulness for the Laplanders played no role in producing the natural phenomena themselves: the snow, driftwood, and whales would have been just as they are even if the Laplanders had never been forced to live so far north, as Kant concludes.[11]

In the text of the Critique, it is a bit puzzling why Kant includes this discussion at all, let alone why he spends so much time elaborating its details (as I have done, following him). This passage is illuminated by considering Kant's early modern context: Kant's discussion of the "purposive" driftwood is of a piece with other early modern criticisms of teleological approaches to nature, such as the appendix to book one of Spinoza's Ethics. Goethe memorably criticized such reasoning in a couplet in his Xenien, titled "The Teleologist": "What reverence is due the world's Creator, who when/ Creating the cork tree graciously also invented the cork."[12] At its worst, these sorts of considerations lead to the insipid reflections which continue today under the

[11]There are ecological grounds for quibbling with Kant's example here. For example, surely whaling has greatly affected the kinds of marine life to be found in the Arctic, and so the advantage the Laplanders have taken of the whales is part of the story for how whales got to be as scarce as they now are. But these scruples do not detract from Kant's conceptual point.

[12]"Welche Verehrung verdient der Weltenschöpfer, der gnädig/ Als er den Korkbum schuf, gleich auch den Stöpsel erfand." This poem is quoted by Ernst Cassirer, who also quotes an 1830 letter to Zelter in which Goethe writes "It is an unbounded service of our old Kant to the world, and I may add to myself, that in his *Critique of Judgment* he effectively placed art and nature side by side, and granted both the right of acting in accordance with great principles without purpose. Spinoza had earlier inspired me with a hatred for absurd final causes. Nature and art are too great to aim at ends, and they don't need to either." (Cassirer 68) As will become clear from my fourth chapter, Goethe can have in mind only *external* and not internal purposiveness in view with this criticism, as Spinoza also seemed to. See (Garrett 1999) on Spinoza's view of teleology.

name of "intelligent design" Creationism; in a more respectable context, Kant had discussed the urge to view things in this way in relation to what he called the "physico-theological proof" for the existence of God. Kant called this argument from design "the oldest, the clearest, and the most accordant with the common reason of mankind" (A623/B651) and claimed that "This proof always deserves to be mentioned with respect" (A623/B651).[13] As with the rest of the arguments in the "Transcendental Dialectic" of the first Critique, we are told that this argument presents us with a "transcendental illusion" which we can never dispel – the pull of the physico-theological proof is something Kant wants us to hold onto, though we must hold back from endorsing its transcendent conclusion.[14] In the third Critique, physico-theology is explicitly returned to in §85, and the appendix of the book in general is devoted to relating the teleological form of judgment to Kant's account of our moral vocation, with humanity considered as a moral being as "the ultimate end of nature as a teleological system" (KdU 297, 5:429). This is the reason Kant discusses the Laplanders: he is setting up what he will discuss much later in the book, when the phsyico-theological proof is taken up again; the material is not deeply important for Kant's account in the "Analytic" itself.

Here it is helpful to note that Hegel, too, discusses this sort of sham teleological reasoning before beginning his genuine discussion of teleology. In the addition to §205 in the Encyclopedia Logic, Hegel writes

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[13]Hegel quotes these remarks of Kant's, and criticizes them, in his own discussion of the teleological argument; see (VPDG 172).

[14]I am working on a manuscript which uses the distinction between logical and transcendental illusions to clarify the distinction between concepts of the understanding and Ideas of reason in Kant (Lindquist In Progress).

> When people speak of "purpose" they usually have only external purposiveness in mind. From this point of view things are held not to bear their determination within themselves, but to count merely as *means*, which are used and used up in the realization of a purpose that lies outside of them. This is the general viewpoint of *utility*, which once played a great role, even in the sciences, but soon fell into deserved discredit, and was recognized as a viewpoint that does not suffice for a genuine insight into the nature of things.... However, since in the teleological approach we also have to deal with the well-intentioned concern to demonstrate the wisdom of God, as it specifically announces itself in nature, it must be remarked that, in all this searching out of the purposes for which things serve as means, we do not get beyond the finite, and we can very easily end up in lame reflections; for example, when it is not only the vine that is considered under the aspect of the well-known utility that is has for men, but the cork tree, too, is considered in its relation to the stoppers cut from its bark in order to seal wine bottles. Whole books used to be written in this spirit, and it is easy to see that neither the true interest of religion nor that of science can be advanced in this way. External purposiveness stands immediately before the Idea, but what stands on the threshold like that is often precisely what is most unsatisfactory. (EL§205Z, 282)

For Hegel, what is praiseworthy in this way of thinking is just the "well-intentioned concern to demonstrate the wisdom of God"; Hegel is sympathetic to the religious drive which led (and continues to lead) to the production of "lame reflections" about how artful the craftsmanship of the world is. But good intentions do not necessarily lead to good acts (certainly not for Hegel), and "the true interest of religion" is not actually promoted by these well-intentioned wastes of people's time. Hegel will retain no positive role for anything like the argument from design, unlike Kant; for Hegel these sorts of reflections "do not get beyond the finite", and really show only mankind's projection of our utility-considerations onto nature, much as Spinoza had argued in the famous appendix to book one of his Ethics.

Here we can see a strong contrast between Kant and Hegel. Kant feels the pull of the argument from design, and seeks ways to resist it, for he thinks we need to avoid the transcendent metaphysical knowledge it concludes in. He retains a place for something like the design-argument, and thinks it is important and necessary to do so, but wants us to not follow it to its end. On the other hand, Hegel is no enemy of transcendent metaphysical knowledge, even knowledge of the existence of God. But Hegel doesn't feel the pull of the argument from design, and seeks ways to keep others from feeling a pull from it. This is because he thinks it manifests a way of thinking which is fundamentally confused, and which it is important we find a way to stop falling into. As my topic is Hegel's treatment of Kant's views on teleology, and not Kant's own speculations about the moral vocation of humanity, these broad considerations will be set aside in what follows: the type of "purposiveness" Kant first introduces is for Hegel not really deserving of the term, and he pays it no serious attention. For Hegel, the analysis of judgments of purposiveness really begins with what Kant turns to next: the purposive relationships exhibited in the production of artifacts, genuine *external purposiveness*, which does not require us to posit an unknown "great architect of the universe".[15]

IV. External Purposiveness, take two

In the case of artifacts, it is not a mere coincidence that an object exists and seems to exhibits purposive relations; that these purposive relationships exist is indeed related to the origins of the artifact. The kinds of considerations which were merely fanciful in the case of the

[15]This term is taken from Freemasonry; the complicated, disreputable, and intriguing role of Masonic secret societies in German Idealism and Romanticism is an object of ongoing scholarly concern. On the significance of Reinhold's membership in the Bavarian Illuminati for his popularizations of Kant, see (Franks 2005), chapter four; on Schelling's masonic connections see (Buck-Morss 2009).

Laplanders' driftwood have their home here. Kant discusses the example of a watch to exhibit how we judge purposiveness to be at work in the case of an artifact:

> In a watch one part is the instrument for the motion of another, but one wheel is not the efficient cause for the production of the other: one part is certainly present for the sake of the other but not because of it. Hence the producing cause of the watch and its form is not contained in the nature (of this matter), but outside of it, in a being that can act in accordance with the idea of a whole that is possible through its causality. (KdU 246, 5:374)

For a watch to exist at all, the parts of the watch have to be precisely calibrated to work with each other so as to reliably indicate the time: gears must turn each other smoothly, springs must stretch and compress without breaking, and in general all of the various parts of the watch must stand in the right kinds of relationships to each other in order to make the whole work as a watch. This is why Kant says that one part of the watch "is the instrument for the motion of another" and is "certainly present for the sake of the other": the mainspring is there to store energy to turn the gear train, which is there to oscillate the balance wheel back and forth, and so on to eventually turn the hands on the clock-face in regular fashion. These "to"s are "in-order-to"s, and indicate purposive relationships of some kind. If all of these parts were not intended to eventually be present together, so as to make the watch useable as a timepiece, none of them would have been assembled in this way to begin with.

Here it is not a mere fantasy on our part that makes the parts of the watch seem to exhibit purposive relations with respect to one another, as it was in the Laplander's case: if it was not for the purposive relations that the parts of the watch stand in towards each other as parts of an artifact, the parts of the watch would never have been brought together in the way that they in

fact were brought together. So in this case, we really can explain the origin of the watch as a whole partly by reference to the purposive relationships that the parts of the watch stand in with regard to each other. The purposive relations really do work to make sense of why the watch is as it now is. But the kind of work purposiveness is doing here is mediated by an external agent, the artificer: the need of the gear train for a mainspring to turn it plays a role in bringing about the organization of the watch only because this need is represented in the thinking of the watchmaker as he works. If no watchmakers ever represented these sorts of purposive relationships to themselves, then no watches would ever be made. This is the "external" aspect of external purposiveness. As Kant says, "the producing cause of the watch and its form [...] is outside of it," in a being which thinks of this form and works to assemble something in nature which manifests that form. Without this kind of external agency, there would be no external purposiveness.[16]

V. Internal Purposiveness and "Natural Ends"

But there is another sort of purposiveness given to us in experience, one we seem to encounter in our inquiries into nature. This is seen in what Kant calls a *natural end*, which he defines as being both a product of nature and an end (KdU 242, 5:370). Beginning from this definition, Kant will ultimately end up skeptical of the reality of natural ends, so far as we can ever know. Kant's general conception of an "end" is borrowed from practical philosophy, and if nature was able to produce artifacts, these would satisfy Kant's definition. But Kant's development of the concept of a "natural end" will build to a richer conception than the one he

[16]Hegel's discussion in the "Teleology" section of the Science of Logic lays out Hegel's account of external purposiveness, which he also calls "finite teleology". The account broadly agrees with Kant's, though it is richer in detail, and combined with an account of means-end reasoning in general.

begins with, for a natural end is said to exhibit an *internal* purposiveness, and this notion is not the mere projection of the practical relations of artifact-production onto nature.

Kant's route towards the full development of the concept of internal purposiveness is indirect; we will follow him along his wandering path. Kant first gives us a principle which he acknowledges will be ultimately inadequate: "I would say provisionally that a thing exists as a natural end **if it is cause and effect of itself**" (KdU 243, 5:370). Kant immediately elucidates this paradoxical-sounding expression by extended consideration of a simple example: a tree.[17] A tree is said to be "both cause and effect of itself" in three ways: it reproduces its species, it grows, and it repairs itself when injured. These three cases will all be important for Hegel's account of the Idea of Life in the Science of Logic, where the issues they raise will be taken up in the reverse of the order Kant presented them in.

There is a clear sense in which the form of a given tree is owed to that same form (in another tree): an acorn grows into an oak because acorns are produced for this purpose by oak trees. We can therefore refer to both cause and effect in this case as "the form of the oak tree". In this way Kant says that the tree "generates itself as far as the **species** is concerned, in which it, on one side as effect, on the other as cause, unceasingly produces itself, and likewise, often

[17]There is a terminological complication in Kant's text that I am setting aside as a distraction: Kant uses the word "life", *Leben*, only when discussing animal life, not plant or other life. English sometimes follows this usage; a Google Books search for the phrase "not a living thing around" produces examples of people describing desolate environments where there are no "higher" living beings, only plants and fungus etc. There is something reasonable in this way of speaking, as Hegel would be quick to note: animals show more clearly than plants what distinguishes living from non-living nature. But as Kant's use of a tree for his examples make clear, the conceptual issues at work apply equally to plant-life and animals; I will thus freely use "life" to describe any sort of living thing, broadly speaking, even when paraphrasing Kant's views. I will return to this issue in Hegel in my final chapter. Thanks to Dalia Nassar for pressing this point on me in conversation in Sydney.

producing itself, continuously preserves itself, as species." (KdU 243, 5:371) The individual oak trees are not said to cause each other in this way (for the oak which sprouts from an acorn did nothing to produce the oak from which that acorn fell), but the species "oak tree" continues to exist in nature only because of work that this species itself does to cause its continued existence.

Because this self-production of the species leaves the production of the individual trees dependent on causal factors outside of each of them, depicting them as not individually self-producers, dealing with the production of these individuals is naturally the next thing for Kant to consider. Kant thinks that here, too, there is a way in which a tree can be said to be "both cause and effect of itself":

> Second, a tree also generates itself as an **individual**. This sort of effect we call, of course, growth; but this is to be taken in such a way that it is entirely distinct from any other increase in magnitude in accordance with mechanical laws, and is to be regarded as equivalent, although under another name, with generation. This plant first prepares the matter that it adds to itself with a quality peculiar to its species,[18] which could not be provided by the mechanism of nature outside of it, and develops itself further by means of material which, as far as its composition is concerned, is its own product. For although as far as the components that it receives from nature outside of itself are concerned, it must be regarded only as an educt [rather than a product, i.e. it must be regarded as merely aggregating materials which already have their respective forms, rather than having a form which is newly produced by the combination of these forms][19], nevertheless in the separation and new composition of this raw material there is to be found an originality of the capacity for separation and formation in this sort of natural being that remains

[18]This bit will be especially important for my purposes later on, but Kant doesn't dwell on the point.

[19]This gloss on "educt" is indebted to the gloss in Werner S. Pluhar's translation of the Critique of Judgement, (p.250 FN31). Kant's German here is simply *Edukt*.

> infinitely remote from all art when it attempts to reconstitute such a product of the vegetable kingdom from the elements that it obtains by its decomposition or from the material that nature provides for its nourishment. (KdU 243, 5:371)

A tree's growth is not like a balloon being inflated or a sponge being filled with water; it does not increase in size by the merely mechanical addition of matter to it. As Kant says, what is special about growth in the biological sense is the same as what is special about biological generation in general: via these processes a non-mechanical being seems to somehow emerge out of merely mechanical components. There is a sense in which trees must be seen as mere "educts" which bring together light, water, air, soil etc. as materials which have their forms independently of the tree, and whose forms do not by their mere combination produce the form of the tree. For if we try to find this tree-form in the component materials which the tree uses for its growth, we will not find it; the light, water, air, and soil in which a particular tree grows seem indistinguishable from other light, water, air, and soil in which no trees are found, and no experiment produces trees by the mere assemblage of these component materials. But for this same reason Kant says we must not regard trees as simply "educts", but as also exhibiting "an originality of the capacity for separation and formation" which exceeds any we are capable of imitating. Somehow a tree is able to be presented with light, water, air, and soil and use these to produce more tree-material for itself. The tree takes from its environment materials which we cannot use to produce a tree, and adds to itself by means of them. Even if we take a fully grown tree and decompose it into what we take to be its elements, we cannot from these elements form again anything capable of the kind of growth which a tree accomplishes so readily. Somehow trees must be generated from

these materials, but it seems that only trees can perform the work required to effect this.[20] Hence if a tree, as effect, is to be attributed to the workings of these materials on it, those workings must also be attributed to the tree which alone shows us the right sort of "capacity for separation and formation" of those materials to end up causing the production of a tree. In a tree's growth the tree is thus "both cause and effect" of itself: the tree's working on its materials causes the increase of just the tree which itself does the working.

But in growth and generation, there is still some (seemingly inexplicable) causal work being done by the light, water, air and soil in producing the tree. The third way in which Kant says we can regard a tree as "both cause and effect of itself" removes this reference to causal work done by something outside of the tree:

> **Third**, one part of this creature also generates itself in such a way that the preservation of the one is reciprocally dependent on the preservation of the others. [...] the leaves are certainly products of the tree, yet they preserve it in turn, for repeated defoliation would kill it, and its growth depends on their effect on the stem. The self-help of nature in the case of injury in these creatures, where the lack of a part that is necessary for the preservation of the neighboring parts can be made good by others; the miscarriages or malformations in growth, where certain parts form themselves in an entirely new way because of chance defects or obstacles, in order to preserve that which exists and bring forth an anomalous creature: these I mention only in passing, although they belong among the most wonderful properties of organized creatures. (KdU 243-4, 5:370-1)

A tree's leaves sprout from its stem, but if these leaves are consistently plucked from it that stem

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[20]Kant's discussion suggests he may have thought there is something chemically unique at work in living beings, as was common before the synthesis of urea in 1828; I am not aware of a text which settles whether or not he believed this was the case. Hegel will be explicit that the types of chemical and physical processes at work within living beings are the same as those in non-living nature; see the discussion of the "assimilation-process" below.

will wither. In this way the preservation of both leaves and stem are needed, in general, for the preservation of either leaves or stem. As Kant mentions, "the self-help of nature" shows trees which are deprived of one of these necessary parts adjusting themselves to find a way to preserve the whole tree in spite of its mutilation: if one part is removed, other parts compensate to maintain the life of the whole tree. In both cases the parts of the tree function in concert with each other to maintain the life of the whole tree, and in doing so maintain their own life. In this work done by its parts with one another, the parts of the tree are both the cause of their continued existence and the effect of their continued existence: the tree keeps itself alive through the mutual interactions among its parts.

It is this third way of seeing a tree as "both cause and effect of itself" which Kant thinks is most important for articulating the significance of what he means by a "natural end".[21] Once Kant has introduced it, he is almost in position to refine his statement of the principle of what is needed for something to be judged to be a natural end. A natural end was initially defined as something which is both a product of nature and an end: Kant at this point in the Critique suddenly interjects that this positions it in two causal nexuses, that of *efficient causes* and of *final causes*, which he says we can distinguish by their temporal directions. The nexus of efficient

[21]Kreines is perceptive here: he notes that Kant "recognizes assimilation and reproduction. But he argues that the general philosophical problem concerning natural teleology is independent of these specific ways in which our experience of real living beings happens to suggest the self-organization of a *Naturzweck*. Hegel's analysis of life is more complex: it also demands a specific relationship between the whole and the outside environment and between the whole and other wholes of the same general kind or species." (Kreines 2008 358) The details of Kreines's reading of what he calls Hegel's "analysis" will come in for criticism below, but Kant's neglect of two of the three examples he himself introduced is well-observed, as is the connection of all three to Hegel's own views. Rachel Zuckert notes that "Though Kant initially presents the three aspects of organisms as equally important, he tends to neglect the first in his further discussion" but she does little with this point. (Zuckert 99)

causes "is a connection that constitutes a series (of causes and effects) that is always descending; and the things themselves, which as effects presuppose others as causes, cannot conversely be the causes of these at the same time." (KdU 244, 5:372) This is the temporal causal nexus which Kant dealt with at greater length earlier in his theoretical philosophy; being a member of this efficient causal series is equivalent to being a product of nature for Kant. "In contrast, however, a causal nexus can also be conceived in accordance with a concept of reason (of ends), which, if considered as a series, would carry with it descending as well as ascending dependency, in which the thing which is on the one hand designated as an effect nevertheless deserves, in ascent, the name of a cause of the same thing of which it is the effect." (KdU 244, 5:372) Kant illustrates this with the example of a house: a house is the cause of the rent paid on it, but the representation of this rent was the cause of the construction of the house, and so the rent was also the end which caused the house's construction. In the final causal nexus, understanding the causal powers of the representation of the rent requires seeing that the house constructed is to serve as a mere means towards this end of collecting rent, which it will in turn bring into being.[22] Kant claims (possibly because he has distinguished them in terms of two different temporal directions) that "there cannot be more than these two kinds of causality" (KdU 244, 5:373).[23] Being a natural end is

[22]It is striking that Kant seems to assimilates the entire "causal nexus" of final causation to an efficient causation mediated by representations. In this he is similar to Suarez, and very far from Aristotle. Hegel's views are self-consciously close to Aristotle. (I am not aware of Hegel ever mentioning Suarez, or of the historical details linking Kant to late scholasticism, though the handbook tradition Kant was part of surely played a part in this. See (Sgarbi 2016).)

[23]It is unclear exactly why Kant believes this, as he offers no argument for it in this passage; Hegel believes this claim is plainly false. What Kant describes as "efficient causality" Hegel regards as ultimately incoherent; what is closest to it in his system is mechanical causality. What Kant describes as "final causality" is for Hegel an obscure presentation of causal relations as such. For Hegel it is important that even in "finite causality it is substances that are actively

participating in both of these causal nexuses; being a product of nature is being in the efficient causal nexus, and being an end is being in the final causal nexus. Kant can thus represent his task to himself as being to articulate conditions such that in a single object "the connection of **efficient causes** could at the same time be judged as an effect of **final causes**." (KdU 245, 5:373)

The first of these conditions is that "its parts (as far as their existence and their form is concerned) are possible only through their relation to the whole. For the thing itself is an end, and is thus comprehended under a concept or an idea that must determine[24] *a priori* everything that is to be contained within it." (KdU 244-5, 5:373) This is a requirement on being a natural end because a natural end must be placed within the nexus of final causes, and so the whole which is finally to be arrived at must determine what parts need to come into being to produce it.

This requirement would be met by anything which was an end, either natural or artificial. In making a watch, a watchmaker begins with a "concept or idea" of the watch which

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related to one another" (WdL 569), and because of this the "ascending" order of dependence which Kant sees as only *hypothetically* relevant is actually essential for understanding all causal relations. As in the opening books of Aristotle's Physics, for Hegel acts of substances are understood only by seeing these acts as characterized by the ends which individuate the changes these substances are undergoing, their causal "forces" understood only by looking to their final "expressions". So even in "finite causality" the temporal bidirectionality of the causal nexus is important for Hegel: the present is partly determined by the future towards which it is headed, and is not fully intelligible as "present" alone.

[24]Note that Kant here says that an end is comprehended (by us) "under a concept or idea that must determine *a priori* everything that is to be contained within it", not that an end "must be comprehended as being under a concept or idea that determines *a priori* everything that is to be determined within it." To be an end at all does not require a relation to a concept; only being *comprehended* as an end requires a relation to a concept. This misreading leads Kreines down a rabbit-hole in speculating about Hegelian "objective concepts" as what are needed for teleological explanations; see (Kreines 2008 363ff.).

"determines *a priori*" what he must assemble to bring that watch into being.[25] To restrict our considerations to ends which are natural ones, Kant adds a second requirement:

> it is required, **second**, that its parts be combined into a whole by being reciprocally the cause and effect of their form. For in this way alone is it possible in turn for the idea of the whole conversely (reciprocally) to determine the form and combination of all the parts: not as a cause[26] – for then it would be a product of art – but as a ground for the cognition of the systematic unity of the form and the combination of all of the manifold that is contained in the given material for someone who judges it. (KdU 245, 5:373)

If a natural end is not to be a product of artifice, then it cannot be brought into being by someone thinking a representation of its whole. But because it is placed within the nexus of final causes, its parts must be possible only through their relation to the whole, i.e. each of the parts must be possible only through its relation to all of the other parts. From this Kant concludes:

> In such a product of nature each part is conceived as if it exists only **through** all the others, thus as if existing **for the sake of the others** and **on account of** the whole, i.e., as an instrument (organ), which is, however, not sufficient (for it could also be an instrument of art, and in this way represented as possible at all only as an end); rather it must be thought of as an organ that **produces** the other parts (consequently each produces the others reciprocally), which cannot be the case in any instrument of art, but only of nature, which provides all the matter for instruments (even those of art): only then and on that account can such a product, as an **organized** and **self-organizing** being, be called a **natural end**. (KdU 245, 5:373-4)

After drawing this conclusion, Kant finally presents a "principle for the judging of the internal

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[25]This determination is "*a priori*", I take it, because the watchmaker's representation, and not only some experience which he will need to come across in the course of his work, is what dictates what the parts of the watch will need to be. "*A priori*" would then have the simple sense of "beforehand, from the start".

[26]See footnote 22, above, on Kant's narrow understanding of "causes".

purposiveness in organized beings" which he regards as satisfactory: "**An organized product of nature is that in which everything is an end and reciprocally a means as well**. Nothing in it is in vain, purposeless, or to be ascribed to a blind mechanism of nature." (KdU 247-8, 5:376) In such an organized whole, we can explain both the parts and the whole teleologically: both parts and whole are produced by the parts which the whole makes possible; whole and parts are there for the sake of each other. In the case of the watch, the merely external purposiveness only extended to the *organization* of the parts: the individual bits of metal etc. which composed the watch had to be brought from elsewhere and were merely fashioned together by the watchmaker. In contrast, internal purposiveness involves production of *both* the organization *and* the actual constitution of the parts of the organized whole. This purposiveness is "internal" because the teleological relations between the parts are not separable from those parts themselves: without purposiveness these parts can neither be nor be conceived. Kant relates his principle to a "well known" maxim of

> the anatomists of plants and animals [...] that nothing in such a creature is **in vain**. In fact, they could just as little dispense with this teleological principle as they could do without the universal physical principle, since, just as in the case of the abandonment of the latter there would remain no experience at all, so in the case of the abandonment of the former principle there would remain no guideline for the observation of a kind of natural thing that we have conceived of teleologically under the concept of a natural end. (KdU 248, 5:376)

It is thus not mere curiosity which has lead Kant to the critical investigations of the concepts of a natural end and of internal purposiveness; these conceptions are needed by "anatomists of plants

and animals" for the scientific study of living nature as heuristics which can never be entirely dispensed with. In the appendix to the Critique of the Power of Judgement Kant goes on to argue that these conceptions also have utility for philosophy: we are eventually said to have moral grounds for believing that nature as a whole is a natural end, and that humanity as a moral being is the final end of nature "to which the whole of nature is teleologically subordinated."[27] (KdU 303, 5:436) So for Kant both natural science and moral philosophy have an interest in the clarification of the concept of a natural end.

VI. Kant's Skepticism Regarding Natural Ends

As natural ends must be internally purposive organized beings, Kant's principle tells us that we must regard any natural being which we take to be organized or active teleologically to be an internally purposive organized being, in which every part is reciprocally means and end. So where experience provides us with trees which engage in "the self-help of nature" and grow and reproduce themselves after their kind, Kant's principle for judging internal purposiveness tells us we should regard the parts of those trees as reciprocally cause and effect of each other, and see nothing done by the parts of that tree as "in vain", owed to mere chance.[28] Regarding them in this

[27]This kind of teleological "subordination" can seem to turn the purposiveness of the world into merely external purposiveness. Naomi Fisher has an interesting discussion of this transition in Kant, and appeals to it in arguing that (unlike Schelling) Kant does not have a genuinely internally purposive view of nature at all; see (Fisher 2015), chapter three.

[28]There is a difficulty here: As Kant's own example mentions, the "self-help of nature" occurs only in the face of "miscarriages or malformations of growth, where certain parts form themselves in an entirely new way because of chance defects or obstacles". (KdU 244, 5:372) So it seems that Kant's own view must be that experience shows us apparent natural ends which reveal themselves to be natural ends in part by how they *overcome* the effects of chance on their development, not by having nothing in their development happen "because of chance". But his official statement of the principle by which we are to judge natural ends is inconsistent with this reading. For an argument that because of this principle "The theory of evolution by natural

way makes comprehensible to us how they might engage in the apparently purposive activities which experience presents us with, and provides us with a heuristic for investigating them further. However, Kant argues that, while the principle is necessary for us to use as an unavoidable heuristic, we can never regard this principle as serving more than a heuristic function: for all we can know, all apparent purposiveness in nature which experience presents us with might in reality be the result of blind mechanism, with no work genuinely being done by any purposive relationships.

We have now returned to the point from which this chapter began: Kant's skeptical view of natural ends. We can now turn to Hegel, to see how he will improve on Kant's handling of this material. But before doing this, it is worth dealing with a plausible way to avoid Kant's problems which Hegel does not think is really satisfactory.

Kreines notes that one way to defend teleological explanations is to claim that explanations in terms of "efficient causation" and in terms of "final causation" are simply different kinds of explanation, "so that we can then say that both legitimately and independently explain, perhaps insofar as each addresses distinct explanatory interests or practices of our own." (Kreines 2008 350) As is often noted, for Aristotle these are two different kinds of causes, which answer different causal questions, so why can't Kant make an irenic move and simply allow both

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selection [...] gives us empirical grounds for holding that the living organisms around us *do not* instantiate the regulative idea of an organized being", see (Wood 221-5). Wood here concludes that "the Kantian approach to biology has long since been discredited by the theory of evolution." It is one of the aims of this dissertation to argue that "the Kantian approach to biology" in fact suffers from *internal, logical* defects, and that when shorn of these defects (as happens in German Idealism) there remains much of value in Kantianism for understanding the peculiar logic of inquiry into living beings: removal of the logical defects in his views saves Kant from empirical refutation. Within its limits, Wood's argument, based on themes from Stephen Jay Gould's crusade against "adaptationism", is valid and well-considered.

kinds of causes to operate in nature?[29]

Kreines has his own peculiar reasons for thinking this move is unavailable to Kant. Kreines's reading of Kant has him arguing that natural ends must involve reaching back in time and causing their own causes, which seems simply incompatible with their being natural products, temporal items in the efficient causal nexus whose effects are never the cause of what caused them. This is a metaphysical problem which is not resolved by simply noting that we can explain things in different ways for different purposes, and that different kinds of explanations are called for in different cases. But such an understanding of final causal explanations is hard to defend, and is difficult to find it attested to in Kant's text. Final causality cannot in general be the result of a future event influencing a past one, for a final cause can explain a development which ends in misfortune: a platypus egg which is devoured before hatching still developed in the way appropriate for a platypus up to that point, unless it was diseased or otherwise infirm. The egg never hatched, and so no platypus resulted from it; but the egg's development is explained by the type of animal which in fact never came into being in this case: it is a *platypus* egg, though this egg never produced a platypus. Here we have final causal explanation, but no relevant future

[29]In the Kant literature, deVries, Zumbach, and Ginsborg handle Kant along broadly these lines; see (deVries 1991), (Zumbach 2012 ch.4), (Ginsborg 2015). (Van Fraasen 1980) (especially chapter five) is a paradigm of this liberal approach to causal explanations, which has much to recommend it. But there are difficulties with using this approach to understand Kant. For example, it makes very mysterious how Kant could have seen such a strong asymmetry between explaining things in terms of efficient and final causes: for him one is how science operates, and the other can never become a part of science. But if these are simply ways of answering different sorts of questions, and both of these sorts of questions are asked by scientists, what is it that bothers Kant about final causal explanations?

event to explain the past ones: the end towards which the egg was developing never came to be![30]

But setting Kreines aside, there is still something that can seem puzzling here. Noting that we in fact offer explanations of natural events in teleological terms does not show that we are justified in doing this, anymore than the fact that experience presents us with apparently teleological relationships shows the reality of natural ends. Particular experiences can get thrown out as misleading, given sufficiently compelling theory, and particular practices can be rejected in a similar manner.[31] Here is how Hegel presents the difficulty:

> [...] the objective world may present us with mechanical and final causes [in experience]; but their existence [as experiences] is not the standard of *truth*: on the contrary, truth is the criterion that decides which of these existences is the true one. Just as the subjective understanding also exhibits error in itself, so the objective world also exhibits aspects and stages of truth that by themselves are still one-sided, incomplete and only relationships in the sphere of Appearance. If mechanism and purposiveness stand opposed to one another, they cannot for that very reason be taken as *indifferent* concepts, each of which is correct on its own account, possessing as much validity as the other, the only question being where one or the other may be applied. This equal validity of both rests merely on the fact

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[30]Eckart Förster has defended a reading of Kant as concerned with the "backwards causation" difficulty in the third Critique. When I pressed him for textual evidence, he only (after some delay) pointed me to a passage in §77 where Kant denies that the whole can be "the ground of the possibility of the connection of the parts" (KdU 277, 5:407). In context, I think the "backwards causation" reading mishandles the passage: the relevant "connection of the parts" is not causal/actual, but conceptual/possible: this is why Kant immediately says that this "would be a contradiction in the discursive kind of cognition", not that it "would be a contradiction for a cognition of an object in time". Kant's objection here is just that we have no cognition through synthetic universals; see my fourth chapter for discussion of this section, which also articulates why Kant ultimately cannot accept knowledge of natural ends.

[31]Schelling will press Kant on just this point in the preface to his Ideas for a Philosophy of Nature, arguing that we have no more reason to reject apparent experience in favor of an account of our faculties than vice-versa; see my fifth chapter for discussion.

> that they *are*, that is to say, that we *have* them both. But since they are opposed, the necessary preliminary question is, which of the two is the true one; and the higher and real question is, *whether their truth is not a third concept, or whether one of them is the truth of the other*. (WdL 734-5)[32]

Hegel's defense of teleological explanations, to satisfy Hegel's own strictures, must do more than note the apparent practical compatibility between giving one kind of explanation and giving another, each in its separate sphere; Hegel is concerned to show something stronger about teleological explanations, and about the objects which we take ourselves to comprehend by means of them. In answer to the question with which the above quotation ends, in the close of his argument Hegel claims that "the end-relation in general has proved itself to be in and for itself the *truth of mechanism*. Teleology possesses in general the higher principle, the Concept in its Existence, which is in and for itself the infinite and absolute – a principle of freedom that in the utter certainty of its self-determination is absolutely liberated from the *external determining* of mechanism." (WdL 735, translation modified) The compatibility between teleological and mechanistic explanations of phenomena does not lie in their talking past each other, addressing themselves to simply different questions; for Hegel the way in which teleological explanations answer questions is ultimately more satisfying than the way in which mechanistic explanations answer questions. We are able to find our way with things better when we can recognize them as alive than when we can only regard them as "dead" matter governed by physical laws; the lack of strict laws governing thoughts of living beings is thus a sign not of the inferiority of the life-

[32]On this last point, see the Hegelian reading of Kant's "Third Antinomy" sketched out in (Rödl 2007), Sebastian Rödl's reply to (McDowell 2007).

sciences, their inadequate mathematization, but of the superiority of living nature itself.[33] Hegel regards this as no small point, and praises Kant in the highest terms for making progress on the topic:

> One of Kant's great services to philosophy consists in the distinction he has made between relative or *external*, and *internal* purposiveness; in the latter he has opened up the Concept of life, the Idea, and by so doing has done *positively* for philosophy what the *Critique of Reason* did but imperfectly, equivocally, and only *negatively*, namely, raised it above the determinations of reflection and the relative world of metaphysics. (WdL 737, translation modified)

Getting clear on Hegel's way of responding to Kant's skepticism about the possibility of knowledge of internal purposiveness will thus, if Hegel is right, "open up" the Idea to us and overcome the "relative world" of metaphysics,[34] in addition to "opening up" the concept of life

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[33]Note that Hegel is not committed to the claim that anything which can be understood mechanically can be understood purposively: the question of "whether one of them is the truth of the other" comes up only "if mechanism and purposiveness stand opposed to one another" in a particular situation. In a particular situation where both mechanistic and purposive explanations can be given, Hegel's view is that the purposive ones give us a deeper understanding of the object, and the mechanistic ones let us only apprehend it abstractly, by losing sight of an aspect of the object. Where only a mechanistic understanding of some phenomenon is available, Hegel does not urge us to find a purposive account to supplement it with, but rather to acknowledge that no deeper understanding of this phenomenon may be possible – for some objects lack the depth living nature possesses. This will be returned to in my final chapter.

[34]A first attempt to say what this pleasant-sounding claim means: for Hegel "metaphysics" in the pejorative sense (as in "The First Position of Thought with Respect to Objectivity" in the Encyclopedia; see especially §27 on "the *metaphysics of the recent past*, the way it was constituted among us before the Kantian philosophy" (EL§27, 65)) is characterized by taking thought-determinations as simply *given* to thinking, as if they were lying alongside one another "out there" (or hidden in the recesses of the soul, or arbitrarily posited by us one at a time) and thought merely turned to each of them in turn. Hegel calls this viewpoint the "relative world" because this way of approaching thought-determinations does not provide us with a way to appreciate their internal (logical) relationships. As each seems to have simply been "given" to thought independently of the others, when thought-determinations fall into conflict with one another (as in Kant's antinomies or in skepticism) metaphysics is left simply trying to let each

for clearer inspection, and showing how we can know internal purposiveness to really be at work in nature.

VII. Toward the Idea of Life: the Structure-Process

To begin with a high-altitude view of this portion of Hegel, to orient ourselves, it is helpful to look at how Hegel's treatment is organized textually. In both Science of Logic and The Encyclopedia Logic, the Idea of Life is the first of the three main divisions of "The Idea", which is the final section of both books. These three main divisions of "The Idea" are titled "Life", "Knowledge", and "The Absolute Idea". The Idea of Life in the Logic[35] has as its moments three processes: "the process of the living being inside itself", the "process against an inorganic nature", and "the process of the genus" are the names Hegel gives them in the more economical treatment of The Encyclopedia Logic (in the brief §s218, 219, and 220).

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thought-determination stand on its own without being able to reconcile them: a world of thought-determinations which are only allowed to relate to one another externally, for fear of them coming into conflict, is the "relative world of metaphysics". The Idea overcomes this standpoint by providing a way of understanding thought-determinations in their holistic interrelatedness, such as purposiveness and causality in the Idea of life, which allows both skepticism and antinomy to be seen through as relying on imperfect understandings of the thought-determinations involved. The "*Critique of Reason*", at its best (by Hegel's lights), allowed us to see that the challenges to philosophy from skepticism and antinomy were indeed capable of being overcome, but without letting us see what moving beyond them would really look like: in Kant philosophy stopped at Critique, and never actually came forth as a developed Science, though Kant acknowledged such a science as the result he hoped to procure by his efforts. (For example, see his discussion of the "*Metaphysics of Nature*" advertised in the penultimate paragraph of the A-preface of the first Critique (Axxi) or the full title of the Prolegomena.)

[35]As a terminological matter, I will use "Logic" (with a capital 'L') to refer to the first sphere in Hegel's system. This sphere is discussed by Hegel in two published books, Science of Logic and Encyclopedia Logic; these are often called "the Greater Logic" and "the Lesser Logic" on account of their respective lengths, and I will refer to them as such when I intend the contrast between the two to be important. What Hegel is talking about in this sphere of his system is logic, the science of thought as such, which I intend when I use the word without capitalization.

But to actually understand the significance of any of these moments in the Logic, we must find a way to begin thinking alongside Hegel's text, ideally without requiring that we already understand the preceding hundreds of pages of the Greater Logic.[36] A helpful way to do this is to take absolutely seriously Kant's principle for judging about a natural end: When we go to make use of this principle, it tells us that we are to regard a being in nature as a whole which makes its parts possible. Kant assumes that we already know what "parts" in nature are, namely small parcels of matter, and so is lead quickly to his antinomy. But we can also take his principle as providing us with a reason to think we *don't* know what all "parts" in nature are until we consider what's special about living beings. Perhaps the "parts" which Kant considered are just those parts whose wholes are "mechanically produced" aggregates of matter. What his principle for judging about natural ends shows us might be that nature has *more kinds* of part-whole relationships than just the one appropriate for thinking about material aggregates. To use the terms from earlier in this chapter, this would let us hold on to the Analytical Burden and Organic Holism from Kant's unsatisfying triad while providing us with a reason for a limited rejection of Material Reductivism: it is true only for *one kind* of part-whole relationship in nature, namely the one appropriate to mechanism and physics, that a whole does not make its parts possible, but depends on their antecedent reality.

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[36] This is a point at which Kreines is especially disappointing: Kreines begins his presentation of Hegel's reply to Kant by simply outlining what he calls Hegel's "analysis of a concept of life." (Kreines 2008 355) If Hegel had in fact simply been analyzing a concept which we happened to already have, then he could not satisfy the strictures which we saw he placed on his own account: he must show not just that we *do* in fact think by means of judgments of internal purposiveness, but that we can do so *correctly*– that these sorts of judgments can be the sort of thing which can be true of nature, and are not mere projections of our imagined fancies onto it.

If we go this route, then we need to have another way of thinking about parts and wholes besides the mechanical one Kant took to be valid universally in nature. Kant's parts can be picked out easily – spatially smaller parts of spatially larger aggregates seem to be the model he has in mind, and this is an intuitive one to work with. So if Hegel thinks we need to have a different kind of part-whole relationship for dealing with living beings, he needs to tell us how to pick out the parts of a living thing. They can't just be whatever is spatially "inside" a living being; we can tell from Kant's case that this sort of part-whole relationship is inadequate for grasping living nature. But taking the lead from Kant, we can try to use just his principle to understand what the parts of a living thing might be: these parts must be possible only because of the whole they contribute to; the system of parts must be organized so that each part is reciprocally means to every other part and itself an end for all of the parts.

Hegel's general term for a part of this sort is *Glied*, usually translated as "member".[37] A living being must be thought of as a whole made up not of mere "parts", but of "members", Hegel tells us: "In respect of its externality, the organism is a manifold, not of *parts* but of *members*." (WdL 766) A "member" is made possible only by the organized whole to which it contributes, and which produces it in its own activity: "all of the body's members are reciprocally both *means* and ends for each other from moment to moment". (EL §216, 291) Kant's example

[37]Hegel sometimes uses the Latinate term "*Organ*" as synonymous with *Glied*; his choice of "*Glied*" over "*Organ*" in the Logic's discussion can be accounted for by the simple fact that Hegel generally introduces terms with Germanic roots first, then uses terms with Latinate roots when he runs out. But the term also has pleasing connotations for Hegel's purposes: it is the mathematical/logical term for a "term", in addition to being an ordinary word for a bodily "organ". Attempting to preserve something of this resonance is a motivation for rendering *Glied* as "member" rather than the more common English word "organ". (There is a further meaning to *Glied* and "member" both which it is not proper to mention here, though I note that the ambiguity in question exists in both languages, and that Hegel is not above alluding to it.)

of the tree's leaves and stem is a case of this sort: the stem and leaves are *members* of the tree because the tree produces itself through the activity of the leaves and stem, and in this manner the leaves and stem produce both each other and themselves. A moment's reflection shows that the tree does this only because it has many other members besides the leaves and stem – roots, sap, etc. all play their roles in maintaining the liveliness of the tree. The system of these members is what makes up the whole tree, and this whole system is what makes each of these members really possible as natural products. Their collective work is what Hegel calls "the process of the living being inside itself" or "the process of reproduction"[38] (meaning self-maintenance, reproduction of oneself). Because of the unfortunate ambiguity of "reproduction" in the context of talk of living beings, I will call this organizing process among the members of a living being "the structure-process".[39]

To see how Hegel develops this line of thought, I will now unpack a dense tangle of Hegelese; it is illuminating first to see how much more is going on in Hegel here than in the corresponding discussions in Kant, while Hegel's goal is at first just to develop the point Kant arrived at. In the longer treatment of the topic in Science of Logic[40] Hegel tells us that

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[38]This label is nor original with Hegel, but is part of an existing triad he takes from the sciences of his day: sensibility, irritability, and reproduction. In The Science of Logic this triad is given an extended treatment. On my reading the details of this triad are not essential for Hegel's logical purposes; in The Encyclopedia Logic they are present only in an Addition to a single paragraph. See footnote 48, following, for more on this triad.

[39]Hegel uses the label "the shaping-process" (*Gestaltungsprozeß*) at (PN§353, III109), and I originally used this as the label for this moment. I used the label "structure-process" in my article published on this material, and have revised this dissertation to agree with that decision.

[40]The broader significance of Hegel's Idea of life in the context of the Greater Logic will not concern us here, as going into it adequately would require at least treating of both the preceeding moment of "Objectivity" which is (external) teleology and the following moment of

> This objectivity of the living being is the *organism* [....] In respect of its externality the organism is a manifold, not of *parts* but of *members*. These members, as such, (*a*) subsist only in the individuality [i.e., in the individual living being]; in so far as they are external and can be apprehended in their externality, they are separable; but when separated, they revert to the mechanical and chemical relationships of common objectivity. (*b*) Their externality is opposed to the negative unity of the living individuality; the latter is therefore the *urge*[41] to posit the abstract moment of the Notion's determinateness as a real difference; since this difference *is immediate*, it is the *urge* of each *single, separate moment* to produce itself, and equally to raise its particularity to universality, sublate the other moments external to it and produce itself at their expense, but no less to sublate itself and make itself a means to the others. (WdL 766-7)

Hegel here makes two distinct points, which he marks with his letters 'a' and 'b'. First, as in Kant's organized being, the parts of Hegel's organism were possible only as parts of the whole; as Hegel puts it the "members subsist only in the individuality" i.e. in the existing organism. As in Aristotle[42], in a sense a man's foot can be removed from him, but it then remains a "foot" only

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the Idea of Knowledge, which is beyond the scope of this dissertation. A rough attempt at this is to note that in external teleology there is still an external relationship between the *concept* of the end with its means and the *realization* of the end through its means, while in the Idea of Knowledge the "parts" of the Idea are not even as external as the members of an organism are, but are entirely determined through the development of the Ideas of the True and the Good. Where a living being has an environment which it determines itself in opposition to, knowledge determines itself without opposition: the standards of truth and goodness are nothing but the True and the Good themselves, while the living being faces as external standards the environment which will ultimately annihilate it in the living individual's diremption from its genus.

[41]It is worth noting that "urge" talk here is metaphor, as the "development" of logical concepts is not a temporal process. What Hegel means by these "urges" is just the Logical demands we will presently go on to confront, not a desire on the part of living beings themselves. In reading Hegel this way I disagree with Julie Maybee, see (Maybee 507ff.).

[42]"If a finger is cut off, a process of chemical decomposition sets in, and it is no longer a finger." (PN§350Z, 103) Compare Aristotle in the Politics 1253a19-125a25: "Further, the state is by nature clearly prior to the family and to the individual, since the whole is of necessity prior to the part; for example, if the whole body be destroyed, there will be no foot or hand, except in an

by homonymy: it is no longer something which can do the work a foot can do, and so is no longer even potentially an actual foot. Separated "members" of this sort admit only of being understood in "mechanical" and "chemical" terms, not in terms of teleological relationships.[43] For the parts to be what Hegel calls "members", to be understandable only in the context of the whole individual living being, they must not simply be parts which are understandable each on their own independent of each other, but must also not vanish into a single continuous whole which is explicable on its own without reference to any of its parts. This is the basis for Hegel's second point, which he indicates by saying that the "externality" of the multiple members is opposed to

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equivocal sense, as we might speak of a stone hand; for when destroyed the hand will be no better than that. But things are defined by their working and power; and we ought not to say that they are the same when they no longer have their proper quality, but only that they have the same name." See also Generation of Animals 734b19ff. Thanks to Arnold Brooks on this point.

[43]"Mechanism" and "Chemism" are the two moments of "Objectivity" prior to "Teleology" in Hegel's Logic. Hegel elaborates on their opposition to teleology in the following passage: "to end stands opposed in general the unfreedom of the Concept, its submergence in externality; both of them, therefore, mechanism and chemism, are included under natural necessity; for in the former the Concept does not *exist* in the object, since the object as mechanical does not contain self-determination, while in chemism the Concept either has a one-sided Existence in a state of tension, or, in emerging as the unity that disjoins the neutral object into tensed extremes, is external to itself in so far as it sublates this disjunction." (WdL 735, translation modified) In discussions of "reductionism" in the philosophy of science, it is common to see biology contrasted with physics, setting aside all of the other sciences biology might be possibly "reduced" to; in this passage Hegel provides a justification for this setting-aside of the other sciences. What concerns us in such discussions is really the relationship between thoughts of living nature and "natural necessity", which encompasses many other sorts of sciences, but which is paradigmatically at work in the laws of physics. One way of viewing these debates is thus to see them as not really about the "reduction" of one science to another at all, but just about the dignity of life-science on its own, as an autonomous branch of inquiry which does not need to borrow its value from another type of science. This is why the actual existing state of the "reducing" science is often unimportant, and the discussion quickly moves to what will happen in "a future state of science" or "in principle, given the development of physics and enough further physical evidence being collected" etc.: the only science actually in view is the science which might be "reduced", which needs to vindicate itself not as one science against another but as a mode of inquiry against a narrow conception of what all inquiry must be like.

"the negative unity of the living individuality": there is a tension between the plurality of the members and the requirement that the individuality make all the members together possible as a *single* organism. Hegel's reconciliation of these opposed determinations is the concept of an organized being in which each member is an end (which makes all the other members possible, and so unites them) and a means to every other member (comprehensible only with reference to those other members). The unity of the living individual is found in each of the parts subjugating all of the others to itself as a mere means for its existence, and this reciprocal subjugation of each part to every other (which also makes every part an end, and not a mere means) allows for the unity of the organism to be nothing but the activity of its many parts.[44] This requirement for a living being to be organized within itself as everywhere both means and end is essentially Kant's account of what a natural end must be, and so we have justified the point at which I began my discussion of Hegel in this section, the "taking absolutely seriously" of Kant's principle for judging of a natural end. But Kant's principle does not present everything which is required if thought is to grasp the living, on Hegel's view.

If all we know about members is that they are reciprocally means and end of each other,

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[44]If a part of a living being lacks any present biological utility for that being, if the part is not something which the living being makes any use of for preserving its life or reproducing etc., then it is not a "member" in Hegel's sense, but is only something present in it through the contingency of nature. On Hegel's view, unlike Kant's, living beings can very well have parts that are irrelevant for them, produced by chance, or by phyletic inertia, etc.; this seems to be how Hegel thought of human earlobes, which he repeatedly points to as a feature which is everywhere present but obviously not essential for our humanity. What is necessary is not that every "part" of a living being be seen to have a purposive relation to every other "part", but that there be a system of parts (the members) which do have this purposive organization among themselves. Without any members, there is no living being, but Hegel does not require that any existing living being be constituted by nothing besides its internally purposive members (see for instance his amusing comments on human earlobes at (EL§175, 253).

that they are made possible only by the organized wholes that they constitute, we have not yet provided a way to grasp members as really present in nature. If we help ourselves to physics in the way Kant did, we are provided with one way of thinking of parts and wholes in nature: different parts are spatially external to one another. This way of distinguishing parts lets us have one part in view apart from others, and gives us an intuitive criterion for knowing when we've located an individual part of a physical whole. So far this is lacking in the case of members; we do not know what it would be for an organized whole of members to be found in nature, or how to distinguish the different members of such an organized whole from one another. At this point in our conceptual development, we still have no way of knowing whether the structure-process really occurs in nature, or if it is a mere figment of the logician's imagination. For the parts of a natural being to be what Hegel calls "members", to be understandable only in the context of the whole individual living being, they must not simply be parts which are understandable each on their own independent of each other, but they must also not vanish into a single homogeneous whole which is intelligible on its own without reference to any of its parts. How are we to conceive of such a structure?

VIII. The Assimilation-Process

The first step Hegel takes towards this conception is to remind us that we are trying to think of an organized whole *in nature*, and so in some sense set off from the rest of it. *This* organized whole is not nature as a whole, in general, but is something we find *in* nature. As Hegel puts it, in the structure-process the living individual "posits itself as an *actual*

individuality, a self-related being-for-self; but at the same time it is a real *relation outwards*,[45] the reflection of *particularity* or irritability *towards an other*, towards the *objective* world." (WdL 769) The self-maintaining individual is divided into members which are reciprocally the means and ends of each other, but so far this is the only determination we have given them, and so none of the members can be distinguished from any other. So far, the living individual cannot be grasped as anything more than an abstract "organism of some sort or other". To further determine the members, and so make the living individual really possible as a concrete organism composed of *different* members, the members must be related not only to each other but to something outside of them, an external nature opposed to the living individual. In making themselves different from this externality, the members will make themselves different among themselves.[46] This is the "reflection of *particularity*", in Hegel's logical jargon: the members are universally "all members", but need to acquire particularizing determinations which will each hold only of

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[45]As mentioned above, footnote 39, this "real *relation outwards*" distinguishes life from knowledge. A "self-related being-for-self" which determines its particularity without a "real *relation outwards*" is a knowing, willing subject who sublates the opposition between themselves and the world in knowing the True and the Good, or is the Absolute Idea, which unites these in the theoretical-practical apperception which knows itself to be (at least in part) as it should be.

[46]This sort of pattern is an instance of "the identity of identity and difference" which is central to the "Doctrine of Essence" in Science of Logic: reflection can determine things as identical to themselves only by also determining them as different from other things; for reflection their being different is equiprimordial with their being identical. This equiprimordiality is why Hegel notoriously claims "*everything is inherently contradictory*" (WdL 439); in saying this he means to contrast himself with philosophers who pretended that "Everything is self-identical, A=A" expressed a first principle of knowledge. Because of the equiprimordiality of identity and difference, reflection's knowing everything as identical to itself expresses not a principle, but a consequence, of reflection knowing everything in relation to everything else. Grasping what something is comes by grasping what it is not and what it is together in their connectedness; these sorts of anodyne reflections are what lies beneath Hegel's scandalous valorization of contradictions in the "Doctrine of Essence".

"some members". The different ways in which the members operate in maintaining the living individual's unity in the face of a world which opposes it gives them their particular distinctive characters, which make possible the teleological relationships to one another that constitute their being members to begin with. Teeth are for chewing food, lungs are for breathing air, feet are for walking on the ground; these sorts of varied activities of the members are the ends which all the members serve as means to enable. Members further removed from the immediate environment will acquire their particular determinations more remotely, e.g. by the stomach digesting food which has been chewed by the teeth and swallowed by the gullet. But all of the members will get their particular determinations through connections which at some point involve interaction with the living being's environment. Different connections to the environment determine different members while maintaining the members as all reciprocally means and ends of each other. A living being does not only produce itself out of the activity of its members alone, but does this in the face of an external nature which might threaten to annihilate it. This is the remarkable activity which Kant had already drawn attention to with the example of growth: the members of a living being do not only produce one another as reciprocally means and ends, but *assimilate their environment to themselves* by doing this.

Leaves do not simply produce healthy stems on their own, as if they operated in a vacuum, but do this by taking in sunlight as nourishment; a man's foot does not contribute to the self-maintenance of that man's life except by letting him *walk* on it, transforming an area which previously seemed to only spatially *contain him* into an area in which he *can move himself around*. The nature external to a living being is not a mere container a living being is placed in, but is precisely what life is not entirely contained by, what life lives through and out of as its

means. Living beings do not have the rest of nature set over against them as something indifferent, but inhabit *environments* which afford them opportunities to live and act in. These environments are not the sorts of collections which physics has in view; an animal does not care about mass or gravitation, but about *food* and *whether a branch can be walked on*. These are facets of the animal's environment which come into view only because of the way a particular animal lives; what is food for an ox is not food for a tiger, and where a bird might perceive a great variety of possible routes to navigate, a rhinoceros might find a single path it can tread. Having in view the relationship of a living being not merely to an *indifferent nature* but to an *environment it assimilates to itself* provides us with a way to see what constitutes the different members of an organism: the different members are those which function *differentially* in letting the organism assimilate its environment to itself, *live* in nature in different ways. What counts as food in an organism's environment comes into view only for the particular kind of organism it is,[47] and the same holds true for *feeding*: seeing an activity as feeding, or a member as a *mouth*, is seeing it against the general background of a system of activities of life that let this kind of animal exist as a part of the natural world.[48] Hegel calls this process by which the living being and its environment are jointly organized "the process of the living being outside of itself"in which the living individual "maintains itself, develops itself, and objectifies itself." (EL§219, 293); he also calls it "the assimilation-process", which is the name I will use for it.

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[47]As Kant had already noted – see footnote 17 above.

[48]This is the main moral of Michael Thompson's "The Representation of Life"; see (Thompson 2008), chs. 1-4. For independent developments of this line of thought, and comparisons of it to Davidson's notion of a "constitutive ideal of rationality", see (Bridges 2006) and (Finkelstein 2007).

It is the assimilation-process which provides the members of the structure-process with their *determinate content* and allows us to tell whether something counts as a "member" or not: members are what play functional roles in a living being's inhabiting of its environment. The kind of functional organization involved in the structure-process has revealed itself to be just the kind of functional organization at work in a living being's distinguishing its environment from itself, and maintaining itself by means of this environment. In what Hegel also calls a "process against an inorganic nature", the living individual makes itself possible as an organized series of members by actually *using* these members to live its life. In doing this, as Hegel says, the "mechanical and chemical conflict of [the living individual's] members with external things", such as the friction of a hand grasping a branch or the dissolving of a bit of food in stomach acid, becomes "an objective moment of [the living individual] itself" (WdL 772), becomes just what the living individual makes use of to continue its life. Hegel articulates a vision of teleological relationships in nature as functioning only *because* other, physico-chemical, relationships are also at work. These relationships reveal themselves as teleological not because they had been produced by a special supersensible cause of some sort, but because, while remaining physico-chemical, these relationships have been absorbed into life, and found new importance in it.

It might seem that this dependence on an external world to determine the particular members undermines the possibility of the parts being determined only by the whole of which they are parts. For it might appear that the living individual can determine its members only with the cooperation of another individual which acts upon it to give particular characters to its members, and so this other individual, and not just the living individual, is doing some of the determining. But this is a misunderstanding. Here is how Hegel addresses this concern: "In so far

as the object confronts the living being in the first instance as an indifferent externality, it can act upon it only mechanically; but in doing so it is not acting as on a living being; where it enters into relationship with a living being it does not act on it as a cause, but *excites* it." (WdL 771) This kind of "excitation" relation is something which comes into view only with living nature.[49] So the kind of dependence on an external world which is needed to give particular characters to the members of the living individual is not something intelligible from outside of the living individual's internal organization, but is specified by the organization of the living individual itself: "the action on the subject consists merely in the latter finding the externality presented to it *conformable*. This externality may not be comformable to the subject's totality, but at least it must correspond to a particular side of it, and this possibility resides simply in the fact that the subject in its external relationship is a particular [i.e., is not simply "an organism" but is an organism of some particular sort]." (WdL 771) The external world makes possible the particular determinations of the members because it enables a variety of particular relations of "comformability" to characterize those members, but it does not determine the members without reference to the organism, and so there is no problem with the idea that the members of an organism are determined only by the role they play in the whole organism. The environment only provides opportunities for different kinds of determinations to occur, and does not force any determination upon an organism, whose self-determination might then be undermined by an

[49]This language of "excitation" is not original with Hegel, but is taken from Brunonian medicine, whose foundational notions are laid out in (Brown 1803); Kant and Schelling were both enthusiasts for Brown's work as an approach to "scientific medicine". In Hegel's logical context I think the details of its scientific usage are not particularly important, and the general image is clear enough without discussion of them. Brunonian medicine does provide a very interesting episode in the history of German Idealism, however; see (Rand 2010), (Risse 1972) and (1976).

external world. The external world does not intrude upon the self-determination of life, but enables it. For example, teeth are able to be the particular member they are because there are chewable-by-teeth parts of the world; feet are able to be the particular member they are because there are parts of the world which can be walked-upon-by-feet. The living being's environment must be in view for the particular determinations of its members to be in view, but this environment likewise cannot be in view as the living being's environment without viewing it as the living being does, seeing it as the playground in which it will live and move and have its being. Different aspects of the external world will excite different reactions on the part of the living individual, and it is in setting upon these excitations that the living individual maintains itself in the various ways in which it lives:

> With the seizure of the object, therefore, the mechanical process passes over into the internal process by which the individual *appropriates* the object in such a manner as to deprive it of its peculiar nature, convert it into a means for itself, and give its own subjectivity to it for substance. This assimilation accordingly coincides with the individual's process of [self-]reproduction considered above; in this process the individual in the first instance draws upon itself in making its own objectivity its object; the mechanical and chemical conflict of its members with external things is an objective moment of itself. (WdL 771-2)

In this "process against an inorganic nature", the assimilation-process, the living individual makes itself possible as an organized series of members by actually using these members to live its life. This is how members are possible as parts of the natural world: living beings in nature differentiate themselves in organic ways.

IX. The Genus-Process (Introduction)

There is a third, and final, moment of the Idea of Life which Hegel argues is necessary to

make fully intelligible how inner purposiveness is present in nature. We have already seen that to make sense of what the members of an organism are, we must see how they are put to work in the organism's environment. But something which might have escaped our notice here is that an organism's environment, speaking generally, allows it opportunities to do *many* different sorts of things, only some of which it will ever actually do. This is part of why Hegel claims that it is misleading to speak of "cause and effect" when talking about living beings: an animal's environment offers it *opportunities* for action which it may seize upon in various ways, but whatever it in fact does is not a *mere effect* of any of these opportunities, and the environment is likewise not a mere cause of anything the living individual does. But the living being does nothing without its environment; without being presented with opportunities for living in some determinate way or other, there is no life at all. No living thing lives because its environment *forces* it to, as though an animal consumed its food because a magnet were pulling it down its gullet. The animal's own acting *on* an opportunity is what produces an "effect" – this activity on the part of the living individual is a complication we do not generally have to think about when speaking of causal relations. The living being is thus free in a way that non-living nature is not; it *lives* its life, and is not merely pushed or pulled through space by a blind necessity. But this is a limited freedom: a living being lives as its environment allows; its members are the members they are just because of the kind of living being it is and the kind of environment that this kind of living being can inhabit. The animal is not unfree in the way non-living nature is, but it is not yet autonomous, not yet *Geist*; its freedom is not self-determination, but the reciprocal determination

of the individual and the general kind to which it belongs.[50] It is not only against the background of a *particular* local environment that the structure-process becomes intelligible, but against the *general* background of a particular *species* which lives in this sort of environment, and of which the living individual is only a singular instance. Hegel calls the process by which living individuals come to be against a specially organized kind of *general* background "the genus-process".[51]

In bringing the environment and its afforded activities into view, we can see that in a sense no living being is ever totally adequate to them all; life always affords more than any living being can actually act upon. In whatever way a single living being lives, there are other ways it might have lived while remaining the kind of living being it is, and the way it in fact lives is only *one instance* of the general way of living provided by the way this kind of living being inhabits its environment. Logically speaking, we can say that living beings are "mortal": the precise way an individual living being maintains itself is not demanded by the kind of living being it is, and so there is no contradiction in that *not* being the way that *any* individual instances of that kind of living being live: there is no contradiction in this individual living being *not* living. In

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[50]"For living beings as such, freedom – going beyond their finitude – is an option only in the very limited sense that they can contribute to the reproduction of their genus." (Wallace 257)

[51]Hegel's term for this sort of organic "kind" is *Gattung*, literally "genus", a word which has an ordinary logical sense. (See (Rand 2013 85FN37).) Immediate identification of Hegel's notion with any other doctrine of "kinds" or "species" or "types" is too hasty, though the word has all those meanings, and others, in ordinary German. Hegel's term should be allowed to have the sense given to it by his logical treatment, and the relation it stands in to other notions in the existing natural sciences is a topic that calls for careful discussion. Unless I am specifically contrasting Hegel's "kind" with some of these conceptions held by others, I will vary in my translations of it, as the existing English versions of Hegel have; I will default to "genus" or "kind", but sticking resolutely to either of these would make my English needlessly awkward.

maintaining its members through the mutual activity of each other in the assimilation of a living being to its environment, the living being shows itself as not necessary for the species of living being it is, but only contingent. The genus, as the universal kind of a living thing, exceeds the individual living being while it also reveals itself as its presupposition; no individual living thing can live up to all that membership in its genus puts forward as possible for it, but however it does live is only by actualizing some of the possibilities of its kind.

As any living individual always fails to live up to the totality of the ways its genus provides for it to live, Hegel speaks of living individuals as "originally diseased"[52] (PN§375, III:209): in living their lives they always fail to take advantage of many of the opportunities they have been provided with, and their living healthily is only a matter of being *relatively* further from death, not absolutely opposed to it. In living their lives, a general way of being a determinate sort of living being comes into being, and doing all that it provides for is a standard which is always already impossible for a living being to live up to. The actual assimilation and self-maintenance episodes which occur in nature can be determinate only as the living individuals which perform them thereby exemplify kinds of living beings, which kinds are thereby determinate as universals that are broader than the individuals under them can be. For example, the genus contains within it not only the particular acts of chewing and walking that the living individual might perform, but chewing and walking generally as the particular types of

[52]Multiple people have asked me if this phrase of Hegel's is intended to echo talk of "original sin". The context makes sense for Hegel to intend such a reference, especially given Hegel's illuminating and provocative treatment of Adam's fall in (EL§24Z3, 61-63), but the language is not the same: the Christian idea of "original sin" is called in German *Erbsünde*, "inherited sin"; Hegel's "original disease" is simply *ursprüngliche Krankheit* – though Hegel did read English texts regularly, so a subtle reference to the English term for this dogma cannot be ruled out.

activities of its members which that kind of living individual enacts. It is by these being the particular types of activities which the living being does that any individual instance of that kind of living being can do them; the particular activities of the living individual can come into view only against the background of the determinations of its genus.[53] The living individual, in the genus-process, thus distinguishes itself not only from its environment via assimilation in reproduction but also from its kind, which it exemplifies without exhausting it, as the particular determination-types it procures for its members in self-maintenance through assimilation are more general than they themselves can be. Though the individual living beings' activities are what determine the content of the genus as a universal way of being a determinate living being, in determining this content they also prove themselves to not be all that a being of this sort could be.

The genus-process is shown by the example Kant had first drawn our attention to when thinking of ways in which a tree can be "both cause and effect of itself": the particular living activities of any individual oak tree are only some of the activities of the kind of thing it is, and this general kind is produced as something which logically "outlives" the individual living being which instantiates it: the death of a single oak tree is not the end of the species "oak tree", and the general ways of living which this species lays out are the outlines of the free development of any individual oak tree. The individual oak trees reproduce the species which is their presupposition. As Kant had already seen, though obscurely, the ultimate key to developing a concept of a natural end is to appreciate that a species reproduces itself as something universal through the finitude of

[53]On this dependence see Michael Thompson's "The Representation of Life" in (Thompson 2008). Kreines cites an earlier version of this paper at (Kreines 2008 374FN61). For a criticism of any reading of Hegel which is reliant on Thompson's ideas, see (Rand 2013).

what falls under it. It is through this holistic relationship of living beings to their kinds, the genus-process, that we find the structure-process and the assimilation-process instantiated in nature.[54]

X. Conclusion

All of the pieces are now in play to make sense of the Idea of life. In particularizing its members in the assimilation-process, the living individual specified its environment as being something which opened itself up to the living individual in certain sorts of ways, providing certain sorts of excitations that offered certain sorts of opportunities for action; we can now see that this was at the same time the genus-process, specifying an environment which offered sorts of excitations for this kind of living being, but which the living individual did not take advantage of. In having the environment in view as the living individual sees it, we see more than what the living individual in fact acts upon; unactualized possibilities for the individual life reveal themselves. Seeing these unactualized possible courses of life reveals the living individual as finite: in living its life it is not living those other lives which could have been. So the living individual shows itself as finite not only from opposition to an externality which opposes it, but within itself: its concrete life is a limitation to not live in other ways it might have lived. No living individual can be all that it can be; as universal, as genus, the living being's kind is not totally representable by any individual, no matter how flourishing that individual life might be.[55]

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[54]The genus-process raises many difficulties, especially given the novelty of my reading; it will be treated of more fully in the following chapter.

[55]This finitude is what the Idea sublates in the transition from "Life" to "Knowledge". The genus and the living individual remain forever opposed in life; in knowledge the True and the Good determine themselves to individuality, and individual knowledge just is what is true and good, without remainder. Our capacity as spirit to live by knowledge is what marks human

All of these moments of the Idea of life are part of the single process which has revealed itself under the triple processes of structure-process, assimilation-process, and genus-process. It is only with all three of these processes in view at once that Hegel's account of the concept of life concludes, and it is only with all three at work at once that the Idea of life has content, allows us to actually think any living beings.

We can now state, in general, how Hegel thinks of living nature, in contrast to how Kant thinks of it: for Hegel *a living being is a functionally organized whole which maintains itself against and through its environment in the manner of some particular species.* Without the general kind in view, we cannot have the environment in view; without the environment in view, we cannot have the particular members in view; without the members in view, we cannot have the internally purposive individual in view. The structure-process is just the assimilation-process which is just the genus-process; this whole articulated complex is just the single logical form which enables us to know what is special in living nature: this logical form is what Hegel calls the Idea of life.

Close attention to the special facts about living nature that Kant had drawn our attention to provides us with a way to make sense of those facts which Kant had overlooked, and allows Hegel to affirm knowledge where Kant had to hold back from it. In this Hegel takes himself to understand Kant better than Kant understood himself, and to be advancing Kant's project beyond

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life as superior to the merely natural lives of the brutes, who are condemned by their ignorance of what they are to remain brutes. As Hegel puts it in his Lectures on Aesthetics, "precisely because he knows that he is an animal, he ceases to be an animal and gives himself the knowledge of himself as spirit." (Aesthetics 80) Viewed apart from this knowledge of our own distinctiveness, Hegel grants that "in accordance with his purely bodily aspect, the person is not that distinct from an ape." (PS§411, 148)

the point Kant had been able to develop it.

Before turning to a substantial objection to my account of Hegel's views, it is worth dealing with a natural objection to any account such as the one Hegel gives: surely the members of a living being are not made of any special "vital matter" or ectoplasm; they are the same kinds of matter we find in non-living nature. Why should those common materials ever lead to anything special arising? As we have already noted, Hegel agrees that the kinds of materials found in organic and in non-organic nature are the same; what makes living nature special is not a special kind of *thing*, such as the "soul-things" discussed in Kant's "Paralogisms", but the unique kind of self-organization Kant had already drawn our attention to with his tree examples. One can treat a horse's blood as a fluid like any other; it is then subject to the laws of hydrodynamics and hydrostatics, etc. The innards of any living being can likewise be discussed in purely physical or chemical terms. But if one does this with a horse's blood, one will miss what makes blood a fluid *unlike* any other – one will miss what makes it *blood*, particularly what makes it the blood *of a horse*. Getting a horse's blood in view *as the blood of a horse* requires seeing it in light of what the horse uses its blood for. It only comes into view as the blood *of a horse* against this general background, as being the blood produced and used by a particular kind of living being. If we insist on saying the relationship of a horse to its blood is a relationship of a "whole" to a "part", it is a relationship that other "wholes" do not stand in to their "parts": it is an especially horse-member-ish relationship of whole to part. In Hegel's words, "the mechanical or chemical relationship does not attach to [the living individual], still less the abstract relationship of reflection, of whole and parts and the like. As externality it is indeed *capable* of such relationships, but to that extent it is not a living being; when the living thing is regarded as a

whole consisting of parts, or as a thing operated on by mechanical or chemical causes, as a mechanical or chemical product, [...] then the Concept is regarded as external to it and it is treated as a *dead* thing." (WdL 766, translation modified)

We are now in a position to see why Hegel ultimately objects to speaking of living beings in terms of "a whole and its parts" at all: he views it as being as inappropriate as treating living beings merely mechanically, in terms borrowed from physics. In a sense one can certainly do this, but when one does, it is all too easy to lose sight of what makes thoughts of living beings *distinctive*. As logic is the science of thought as such, it is inappropriate for logic to lose sight of distinctions which make certain kinds of thoughts distinctive; so logic should sharply distinguish between "a whole and its parts" and "an organism and its members", just as Hegel in fact did in the Science of Logic, but Kant had neglected to do in the Critique of the Power of Judgment. Once the logic of living things is handled with this Hegelian carefulness, Kant's curiously skeptical metaphysics falls away, and we are able to appreciate the liveliness of living nature.

Chapter Three: The Genus-Process

I. An Objection Considered

My reading of the genus-process is distinctive among other readings in the Hegel literature, and it is important to address an obvious objection that would come from partisans of those other readings. On my reading, the genus-process is a moment of life as such, and so is in play whenever the structure-process or the assimilation-process is in play: a single living individual distinguishes itself from the kind of thing it is while reciprocally providing this kind with determinate content, on my reading. On most readings of the genus-process, however, what is at play is specifically a process at work across *multiple* living individuals, numerically distinct from one another and separated from each other in space and time: the genus-process, on these readings, is about reproduction across generations.

Here is a sampling of these other readings: "In Genus, Life particularizes itself, implying other Lives." (Carlson 570); "The living teleological system is, in the third place... a genus of mutually external instances" (Findlay 90); "A "*Gattung*" is therefore a genus or kind that is a natural mating kind." (Maybee 517); "the species as a unity of distinct individuals" (Rand 2013 80); "the genus is reflected into itself (i.e., via the interaction of two living things, each of which is an instance of the genus) and obtains actuality." (Rosen 468-9); "[The genus-process] is a process whereby the living individual reproduces itself – not in the sense of sustaining itself as an individual but as reproducing itself as a genus, giving birth to other organisms of the same kind." (Winfield 306); "In doing this he becomes substantial universal, what Hegel calls 'Gattung' (genus). This means that he undergoes another kind of sundering, now into two individuals."

(Taylor 333)[56]

Kreines develops this sort of view in most detail, and I will deal with his account separately; Stephen Houlgate can be taken as representative of the typical reading of this material: "The species to which an animal belongs constitutes the 'substance' of that individual: it defines the kind of creature the animal is. The species, however, is not limited to one individual (unless, of course, the animal is on the brink of extinction). It extends across several individuals and so is something *universal*." (Houlgate 2005 170) Houlgate's first two sentences agree with both Hegel's text and my reading of it. His third sentence, however, conflicts with my reading, and *prima facie* can seem to agree with Hegel's text better than my own. On Houlgate's reading, it is *because* the genus-process "extends across several individuals" that it is something universal; as his parenthetical remark makes clear, he views the sense in which the genus-process

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[56]Robert Wallace is one of the only commentators I have found who does not discuss the genus-process solely in terms of an extension over multiple individuals; he treats the genus as primarily answering the question of what makes an individual living being the same across time (see Wallace 250-1). But for Wallace, too, the genus-process involves "a relationship between the individual and other members of the same genus. Hegel refers to this result, figuratively, as a "doubling" of the individual." (Wallace 252). John W. Burbidge, in Hegel's Systematic Contingency (Burbidge 2007) p.121-124 also has a discussion of "the genus" as "what unites the before and after" (ibid 122) of a living being that assimilates its environment to itself. But Burbidge is explicit that a genus "is not unique to this individual; and the latter can be alien not just to non-living objects, but also to other living individuals of its own genus. What is generic persists as self-identical through a number of these individuals." (Ibid 122) Burbidge here slides from saying that a living individual *can* be alien to other living individuals of its own genus, to saying that in fact it *is* so alien: this shift is not explained or justified. Burbidge also joins Taylor in suggesting that the reality of sex-differences are justified at this stage: "The differences that particularize [several individuals], making them contraries within the generic category, can only be thought as kinds or genders." (Ibid 122) This discussion expands on the view that Burbidge only hinted at in a footnote in (Burbidge 1981 100FN1), which (in its entirety) asserts that "'Genus' as it first emerges, then, refers not to that which a number of distinct individuals share, but to the various incarnations of the same individual as it is modified and transformed through its interactions with its environment."

could be at work in a single individual on its own as a limiting case, where there *had* been multiple individuals of a species, but now only a single instance remains. On my reading, a single living individual, to be a living individual at all, must live its life in a way which is intelligible only against a general background of ways of living for the kind of thing that it is; this general background is the sort of thing which could serve as a background for viewing multiple numerically distinct living individuals, but it does not have to actually apply to multiple numerically distinct individuals in order to be what it is. Houlgate and I agree that Hegel can correctly say "the species is not limited to one individual", but we mean by this very different things: for Houlgate the species must, at least at a previous time, have applied to multiple individuals; for me it is universal in itself and only ever needs to have applied to a single case (though it logically could apply to any number greater than zero).[57]

Houlgate's development of this reading is rhetorically elegant; in his book it allows him to nicely segue from the way in which animal life has a finality in death to the way in which spirit has a kind of eternal life[58] in thinking, and from the way in which sexual differentiation and

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[57]Zero is ruled out on roughly Aristotelian grounds about the priority of actuality to possibility; Hegel is on the side of Aristotle against Plato on this general topic. If there have never been any living beings of a particular "kind", then it is not really a kind of living being, but only an imagined simulacrum of a kind of living being. Kinds, for Hegel, have a beginning in time, and can have an end in time (as with Stellar's Sea Cow); they are not "universal" in a Platonistic sense. There is thus something right, from a Hegelian perspective, in the contemporary notion that species are *individuals*. But for the Hegelian, it is important that they are more than that: they are Ideas. These issues will be returned to later in this chapter; I merely flag them for now.

[58]Personal immortality in Hegel is a difficult subject, on which Hegel is notoriously cagey; when asked about it, he is said to have once simply pointed to a copy of the Bible lying on a nearby table. Making sense of what Hegel actually thought about it is thus outside the scope of this dissertation. My own opinion, for what it's worth, is that on this topic Hegel probably held views he regarded as a Christianized version of Spinoza's opinions, with no role for bodily

reproduction are "climaxes" of animal life (think of salmon perishing after they spawn) to the way in which these are sublated in marriage and the family as moments of objective spirit. These sorts of broad contrasts do capture something of importance to Hegel, but I will argue that the Logic's account of the genus-process does not give readings such as Houlgate's the support it can initially seem to.

I will first present the textual evidence in support of this other reading, my objections to it on grounds philosophical, textual, and empirical, and then my alternative readings of the language in question. I will discuss Kreines's own view, which has some interesting idiosyncratic details which merit it separate attention, after my objections to the others, before closing by detailing my own view.

When introducing the genus-process in the Greater Logic, Hegel says things like the following (my emphases marked in bold): "This its diremption... is the duplication of the individual – a presupposing of an objectivity that is identical with it, and a relationship of the living being to itself as to **another** living being." (WdL 773) "[T]hough the individual is indeed *in itself* genus, it is not *explicitly* or *for itself* the genus; what is *for* it is as yet only **another** living individual" (WdL 773); "this *urge* of the genus can realize itself only by sublating the single **individualities** which are still particular relatively to **one another**." (WdL 773) "[T]he process of the genus, in which the single **individuals** sublate in one another their indifferent immediate existence and in their negative unity expire.... In the genus process, the separated **individualities**

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resurrection and only a very thin sense of personal survival – little more than the sense in which we speak of Dante and Shakespeare as possessing an immortality through their works. What survives my bodily death for Hegel is the divine life that was at work at me while not being restricted to my singular body, that which enables me to say with St. Paul that "I no longer live, but Christ lives in me" (Galatians 2:20 NRSV).

of individual life perish.... In **copulation** the immediacy of the living individual perishes" (WdL 774). In the Lesser Logic, we find similar language: "The particularizing of this universality is the relation of the subject to ***another subject*** of the same genus... – the ***difference of the sexes***." (EL§220, 293)

It is worth noting that Hegel's discussion of the genus-process in the Greater Logic is very brief, even by the often-hurried standards of the Science of Logic; the whole section runs for about three pages, and includes the transition from the section on "Life" to the section on "Knowledge", which does not receive treatment under a separate heading. The section in the Lesser Logic is two short paragraphs, §220 and §221, with one paragraph-long *Zusatz* appended to the latter; the three together run for a little over 350 words in English translation. So there is a real burden placed on the interpreter in making sense of Hegel's rather telegraphic pronouncements on the genus-process.[59]

It is easy to understand why Houlgate, Kreines, and others have taken Hegel to here be saying that the genus-process involves (sexual) reproduction across generations.[60] On this reading, living individuals are, like the round hermaphroditic beings with four hands and four

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[59]It is partly for this reason that I think it important to look forward, to the Philosophy of Nature, to see how Hegel applies this particular logical form in the *Realphilosophie*: he's simply not at his clearest when discussing it on its own.

[60]Clark Butler's interpretation, in the comments on his translation of Hegel's Lectures on Logic, is noteworthy here. His translations in general have been (justly) criticized for inserting his own interpretation into the text where the German is silent, but here he allows the text to be translated ambiguously. He then attempts to remove all ambiguity by repeatedly offering glosses on Hegel's meaning in footnotes (p.217 FNs14-18), implausibly claiming that in Hegel's sentence "The beginning and the end proceed here to the fore out of each other" Hegel means "parent and child" by "beginning and end" (FN17). I do not know in what way Butler imagines parents proceeding out of their children, but nothing in Hegel's text requires us to imagine that they do.

feet in Aristophanes's speech in the Symposium, originally "dirempted", split into different sexes which temporarily attempt to rejoin with one another before perishing. It is only in this kind of interaction between different individuals that we see what they have in common with each other, their genus, come into play; like Aristophanes's two-faced hermaphrodites, the Hegelian genus is imagined to be a thought-entity which combines what in nature is separated, and which provides us with a way to make this separation intelligible to ourselves. Hegel doesn't explicitly say this is what is at work in the genus-process, but it's an intelligible view, and the text does speak of "individualit***ies***" in the plural – and Hegel mentions "the sexual difference" in the Lesser Logic as a coda, with no explanation,[61] which this reading makes intelligible as obviously relevant to what Hegel's talking about.

II. Replies Textual, Philosophical, and Empirical

But as a reading of Hegel, this style of interpretation is open to criticism on many fronts. Purely as a philosophical view, it is hard to see how Hegel can be justified in suddenly introducing multiple individuals falling under a common species at this point in the Logic. In the next section, "Knowledge", Hegel discusses the work of knowledge in a single theoretically/practically reasoning being; in the previous section, "Teleology", Hegel had discussed the working-out of a single chain of instrumental reasoning (culminating in the use of a material for an external purpose). In both of these cases, we find a unity of moments in a single totality. In the "Life" section we also find this, in the totality of members which are organically united (in opposition to a particular sort of environment). The sudden appearance of a *second*

[61]The Geraets, Suchting, and Harris translation is faithful to the German; Hegel ends this paragraph in the Lesser Logic with a bald "*; - die* ***Geschlechtsdifferenz***." This § has no *Zusatze*, and is followed immediately in the text by §221, which does not mention the sexes.

living individual, let alone one of a different sex than the one we had in view previously (whose sex had previously not been mentioned) is jarring. It is thus an advantage, on grounds of interpretive charity, to make sense of these passages without such a jarring posit.[62]

On textual grounds, there is the problem that Hegel (unlike Schelling[63]) does not take sexual differentiation to be fundamental to organic nature as such. In the Philosophy of Nature §348Z, Hegel discusses at length a number of disputes about sexual difference and reproduction in plants. Here I will quote only a small portion of his discussion, which is rich in empirical details, which I will mostly omit for readability:

> With regard to *sexual difference*, it has to be pointed out that the differentiation reached by the plant, in which there are two vegetative selves, each of which has the impulse to identify itself with the other, is only present as a determination analogous to that of the sexual relationship.... There are only a few plant-forms in which this difference in sex occurs in such a manner, that the two sexes are the distinctive features of two separate plants.... in Melons, Pumpkins, Hazels, Firs, and Oaks however, the male and female plants are found on the same plant, so that such plants are hermaphroditic.... Thus the difference here is only quite partial, and the different individuals cannot therefore be

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[62]My reading of the genus-process is in this way akin to John McDowell's reading of the "Lordship and Bondage" passages in the Phenomenology in his "The Apperceptive I and the Empirical Self: Towards a Heterodox Reading of 'Lordship and Bondage' in Hegel's *Phenomenology*" (McDowell 2003). In both cases, what seem to be inappropriately empirical/historical intrusions into a logical discussion in Hegel are argued to be metaphorical, and Hegel is read as much more concerned with Kantian issues than he has been taken to be.

[63]"Throughout the whole of Nature absolute sexlessness is nowhere demonstrable, and an *a priori* regulative principle requires that sexual difference be taken as point of departure everywhere in organic nature." (Schelling 2004 36) Schelling defends this view at length in the pages following this remark; what sense I can make of his arguments seems to boil down to the fact that in physics all matter is constituted by the interaction of opposed forces of attraction and repulsion, and so likewise opposed "forces" must be at work in organic nature too, and these are the two sexes. Strained analogies such as this did *Naturphilosophie* no favors.

> regarded as having distinct sexes, for they have not yet been completely imbued with the principle constituting their opposition.... As the *sexual-parts* of the plant are not an integral part of its individuality, but form a closed and distinct sphere, the plant is sexless. (§348Z, PNIII 93/94)

Hegel treats the question of sexual difference and reproduction in plants as requiring empirical research, which is itself a strike against any reading of the genus-process on which sexual reproduction is a requirement of the logic of life itself: if the way in which multiple "living individualities" come into view is originally sexual, then sexual differentiation should be at the root of organic nature, as Schelling argued it must be *a priori*. But as it happens, at least according to the botanical literature Hegel relies on, some types of plants are more sexually divergent than others, and some types of plants are hermaphroditic. Genuine sexual differentiation, in Hegel's view, requires not merely the presence of one or the other "sexual-part", but that a living individual be *throughout* determined by its being male in contrast to female (or vice-versa). In plants, even in the most sexually divergent case Hegel is aware of, sexual "differentiation" is really just the presence of one member or another in a system of members which is otherwise generally the same in both sexes. Such a member is not of critical importance to the living plants; the loss of it does not cripple them, but it does remove everything which makes them "sexed". Animal life is not like this: the loss of "the" sexual member does not produce an androgynous being, but a castrated one: animals, unlike plants, are not "sexless" even with the loss of "the" member which is most closely linked to reproduction. Sexual dimorphism in animals is regularly marked by differences of size, coloring, secondary sexual characteristics, etc. and cannot be understood as the mere presence of one or another organ. So, on Hegel's understanding of botany, sexual dimorphism is not central to plant life, and so in the sense that

animals are "sexed", plants are not. When Hegel mentioned "– the sexual difference" as a coda in the Lesser Logic, he can't have intended that the sexual difference be taken as present wherever the genus-process is at work in organic nature, for he denies that it is present in plants (except analogically).[64]

An even more extreme test-case for readings such as Houlgate's is Hegel's discussion of infusoria. While discussing the composition of the sea in PN §341Z, Hegel has an extended discussion that begins by mentioning algal blooms:

> Sailors speak of the *blooming* of the sea in summer. In July, August, and September, the sea becomes polluted, turbid, and slimy; further west in the Atlantic Ocean, this takes place a month earlier than it does in the Baltic. The sea is full of an infinite multitude of vegetable points, threads, and surfaces; it constitutes a tendency to break out into vast expanses of phosphorescent light. This phosphorescence is a superficial life which concentrates itself into a simple unity.... The whole surface of the sea is also partly an infinite sheen however, and partly a vast and immeasurable expanse of light, consisting entirely of living points which enter into no further organization. If one takes this water from the sea, the animation perishes instantly, leaving a *gelatinous slime* which is the beginning of the vegetable life with which the sea is filled from its surface to its depths. In each fermentation there is already an immediate appearance of animalcula. Finally however, the sea also progresses into determinate formations, into infusorial animalcula,

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[64]There is another way to finesse this passage: as Julie Maybee notes, "In German, "*Geschlecht*" means not only "sex," but also "genus," "kind" or "species."" (Maybee 521) It can also mean a lineage or noble house (my dictionary lists "*edles Geschlecht*" as meaning "noble stock"); it is a broad term in German. So it is possible to read *die Geschlechtsdifferenz* at EL §220 as not having an exclusively sexual sense, especially given that the phrase has so little context to aid in its interpretation. But the most plausible translation is the sexual one: for most phrases where we use "sex" or "gender" in English, German uses *Geschlecht* (*das schöne Geschlecht*, *biologisches Geschlecht*, *grammatisches Geschlecht*, etc.). So Hegel probably did intend to mention "the difference of the sexes" in the Lesser Logic, as a striking example of how an individual living thing never exhaustively instantiates its genus.

> and other tiny transparent organisms.... Here many have a single life, like the polyps, and then come together again in a single individual. This lower animal world includes a multitude of luminous species, but as it attains to nothing more than a momentary and gelatinous existence, the subjectivity of animal being can scarcely coach it into luminescence, into the external appearance of self-identity. This animal world is unable to hold its light within it as inner selfhood, so that it is transient, and merely breaks out of itself as a physical light; the millions of living beings deliquesce rapidly into their element again.[65] (§341Z, PNIII 37)

Hegel here discusses many life-forms which were very poorly understood before the development of cell theory; what is significant for my purposes is that Hegel is aware of these simple life-forms, and he does not hesitate to call these "vegetable points" and "animalcula" living organisms. After almost two centuries of further research, we now know that most of these "lower" organisms reproduce asexually. Though ignorant of this, Hegel should, on the standard reading of the genus-process, at least be able to assert that these animalculae are produced by other animalculae. They are living organisms, and so (on the readings I oppose) must come from other living organisms with which they share a common universal kind. But Hegel does not assert this. Following the evidence he sees before him (some of which I trimmed in the above quotation, other of which Petry has done the world the service of digging up in his commentary on the Philosophy of Nature), Hegel affirms what Petry in his commentary calls "the spontaneous generation of the sea" (PNIII 248). On Hegel's view, the sea, while not itself alive, is "a living

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[65]Hegel then proceeds to an entertaining discussion of the "host of stars" visible in bioluminescent sea-life as superior to the "stars of heaven", and addresses the "rumor around the town" that he had earlier compared the stars to a rash or to an ant-heap. In fact he had compared them to "an eruption on the skin or a swarm of flies" (§268Z, PNI 258), and he goes on to affirm the superiority of organic "jelly" to "the host of stars" (§341Z, PNIII 38). It is illuminating to contrast Hegel on these matters with Kant's sublime awe at "the starry heavens above me" (KPV 269, 5:162).

process which is always on the point of breaking out into life" (§341Z, PNIII 36). The sea, though it is not itself alive,[66] has within itself what is needed for living beings to periodically emerge from it, without their needing to have come from anything other than the sea. Hegel views the opinion which the standard reading would force upon him, that animalculae must all come from other (unobserved) animalculae, as unscientific:

> "Omnia vivum ex Ovo" [all life comes from an egg] used to be accepted as a proposition, and if the origin of certain animalcula was not known, recourse was had to fabrications. There are organisms that produce themselves immediately however, and procreate no further; infusorial animalcula agglomerate and become another formation, so that they serve only as a transition. (§341Z, PNIII 36-37)

As an empirical issue, Hegel believed that life could emerge from non-living matter (at least in the case of very simple life-forms), and in fact regularly did so.[67] So any reading of the genus-process which commits Hegel to the claim that living beings logically must emerge only from other living beings, and that living beings must share a universal kind with these other individual living beings, is inconsistent with the account of living nature Hegel goes on to give when he concerns himself with the empirical details of nature.

As a clarification, and to anticipate the discussion of Hegel and evolution which will come in an appendix to this dissertation, it is worth noting that Hegel himself *rejects* talk of life

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[66]Hegel's reference to the seas as a "living process" is clearly a metaphor, in context; immediately prior he had called the Rhine a "Naiad".

[67]It is worth realizing that any account of the history of life on Earth which holds that at one point there was none is likewise committed to the reality of spontaneous generation, more commonly called "abiogenesis" nowadays, as an empirical fact. We should not think that Hegel's defense of spontaneous generation automatically makes his account obsolete, as though he was defending the claim that worms arise in cheese or mice from clumps of dust.

"emerging" from the sea, though this seems the natural way to express what he is talking about in the passages I just discussed. Hegel does not deny that it is natural to speak in this way, but thinks it is misleading to do so:

> The earliest doctrines certainly treated the sea as that from which all living existence emerges [*hervorgehen*]. But this very *emergence* [***Hervorgehen***] entails the repulsion of the sea, and the living creature only exists by tearing itself away from the sea, and maintaining itself in the face of this neutrality. (§341Z, PNIII 38)

Hegel believes that the sea has life "emerge" from it, but he does not like putting it this way because "this very *emergence* entails the repulsion of the sea": it entails that what "emerges" is not a continuation of the sea being the sea, but is a discontinuity, a break in which something other than the sea appears and distinguishes itself from the sea as the environment that is set in opposition to it: "tearing itself away from the sea, and maintaining itself in the face of this neutrality". A living being is only what lives its own life, and is not a mere continuation of the existence of what was there before this life began: we need to distinguish our thoughts of these different sorts of things. Here, as elsewhere in Hegel, we need to not allow everything to wash together in a single "oceanic" sense of Being or Nature or Matter, with thought as just what presents us repeatedly with this single sort of object. Hegel wants to teach us differences; among these differences are how life is different from non-life, and this difference he sees as occluded by the rhetoric of life "emerging" from the sea.

As a final objection to the standard reading of the genus-process, I note that, as an empirical matter, there are "immortal" beings whose lives end only violently. Among these are

some medusae and some plants.[68] Traditionally, the phoenix was also held to be such as this: the phoenix died into ash and was reborn out of these ashes; two phoenixes were never alive at the same time, and different "phoenixes" were in reality just the one numerically identical bird at different points in time. That there is no phoenix, and that the jellyfish *Turritopsis dohrnii* reverts back to polyp after developing into medusa, are empirical matters; an account of the logic of life which commits one to accounts of them shows itself to not recognize what makes logic special among the sciences. On my reading of the genus-process, but not the standard ones, Hegel can remain neutral on such questions when discussing logic; the fact that he does mention death and sex in the Logic can be chalked up to the fact that he often illustrates his points with extra-logical material, as with the frequent interludes on the history of philosophy in the Logic. Nothing in the Logic actually commits Hegel to saying anything about Kant, whose existence is an empirical contingency properly handled when discussing the history of philosophy (in the very end of Hegel's system), but Kant is constantly discussed in the Logic; similarly, on my reading, nothing in the Logic commits Hegel to views on the role of death and sex in life, though he does mention them both. Hegel's Logic is always looking forward to the *Realphilosophie*, just as the *Realphilosophie* is always looking back to the Logic, and criss-cross to other parts of itself – this

[68]This point will be returned to at the end of the chapter. Broad topics in the life sciences are opened up at this point, with many curious cases to consider. For instance, *Turritopsis dohrnii* jellyfish grow from polyp to medusa, like other jellies, but then return to a polyp stage and repeat the process. They are widely known as "the immortal jellyfish" because of this lack of a "natural" end to their life cycle – they die only violently, so to speak. The perennially puzzling question of the individuation of plants is also relevant; some "plants" are clonal colonies, and so are in one sense a single plant and not plant*s* at all. As a more trivial matter, Aquinas held that each angel is a member of a unique species (Summa Theologiae Q50A4: "it is impossible for there to be two angels of one species"), as they lack matter to individuate them. On the view I attribute to Hegel, it is only empirically false that there are no such angels; on some views of what it is to be a living being, such angels would have to be ruled out *a priori*.

tangle is the way Hegelian writing is done. But Hegel's readers must not confuse what is distinct just because of Hegel's wild prose.

III. Kreines on Genus

I will now discuss Kreines's account of the genus-process, as he is one of the only philosophers to devote enough attention to the topic to articulate a view which is clearly distinctive in the literature. In general, Kreines agrees with Houlgate *et al* that the universality of a genus lies in its extending over multiple individuals across generations. But while discussing the genus-process in his article "The Logic of Life", Kreines considers a "Kantian objection" to Hegel's views, and this consideration provokes Kreines to draw conclusions which are unique to his account. Kreines originally discusses this objection in a single paragraph and (long) footnote; this discussion is developed more fully in his book Reason in the World, where its discussion fills a few pages, and is connected to objections from contemporary debates between "anti- and neo-teleologists" (Kreines 2015 106-110). The two discussions do not differ in their essentials; I will discuss only the original for reasons of brevity. The objection is similar to Donald Davidson's notorious (and regrettable) "Swampman"[69] thought experiment:

A contemporary Kantian might want to force the issue by insisting on a thought

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[69](Davidson 1987). There is a literature relating "Swampman" to contemporary debates in teleosemantics and teleology more generally; (Neander 2012) has a relevant bibliography. (Thompson 2008 60) uses Swampman-style considerations to bolster his account of thoughts of living beings: "Philosophers have doubted whether such things could have thoughts.... We must accept this skepticism and carry it further: the thing has no ears to hear with and no head to turn; it has no brain-states, no brain to bear them, and no skull to close them in; prick it and it does not bleed; tickle it, and it does not laugh; and so forth. It is a mere congeries of particles and not so much as alive." Thompson notes that Aquinas defends a similar position, in denying that bodies assumed by angels exercise vital functions (so that the three "men" who appeared to Abraham merely appeared to eat, etc.).

> experiment: Imagine that some heap of matter were, by incredible coincidence (perhaps literally involving a lightning strike), to rearrange itself into a simple one-celled organism. This would not be a teleological system, no matter how effectively its parts might benefit the whole; ex hypothesi, the parts are present not because of an end or purpose but merely by coincidence. So if this organism reproduces [itself] and assimilates, then it would satisfy Hegel's analysis without being a truly teleological system. Such a thought experiment is entirely alien to Hegel's procedure. But if a contemporary Kantian were to insist on the experiment, then a contemporary Hegelian could respond: An individual of a future generation is a teleological system. For it exists on account of the general species or "concept" it shares with previous generations. Or, it exists only insofar as its parts are "members" – insofar as these kinds of parts are a benefit in relation to this kind of whole. So it will be a teleological system by Kant's own standard: "its parts (as far as their existence and their form are concerned) are possible only through their relation to the whole" (KdU 245, 5:373). [Kreines appends here a footnote which begins] Perhaps a contemporary Kantian would propose as well that we might create by *design* a reproducing creature. We could give the same response: The first creature will be a means only to *our external* end. But – as above – the parts of *future* generations will *also* be present on account of the intrinsic end of self-preservation. (Kreines 2008 370)

Kreines's reading of Hegel shares with the more standard readings of Houlgate *et al* the claim that the universal genus – "the general species or 'concept'" as Kreines puts it – is a result of the existence of multiple individuals reproducing across generations. But Kreines's view is not committed to claims about reproduction being sexual, or organisms being sexed at all, which is an advantage for his reading; the "designed reproducing creature" he mentions in his footnote is presumably a kind of "Von Neumann machine", a self-replicating robot. Kreines does not elaborate much on this possibility, but I want to dwell on it as intrinsically interesting for anyone interested in the question of what makes living nature special. A single Von Neumann machine

can produce another Von Neumann machine without another Von Neumann machine's assistance, and there is no problem with this being how life in general works, according to Kreines's reading of Hegel. Consistent with his reading, Kreines claims that future generations of Von Neumann machines will count as internally purposive: despite the fact that the original Von Neumann machine is just an artifact, possessing parts organized purposively only because an engineer combined them in that way (and so lacking members entirely), the Von Neumann machines produced *by* that machine (or its successors) will have parts which are brought into existence partly because of the operations of similar parts in the previous generation of Von Neumann machines.

But if this is what Kreines has in mind, then the whole line of thought is confused and irrelevant. Von Neumann machines need not engage in "self-preservation" at all; a machine which produced all of its parts[70] and then assembled them might do nothing to maintain itself, collapsing at the first loosened screw or overheated nozzle. Such a machine does not act on affordances from its environment, but merely moves as it was designed to. In such a machine, the original system of parts is arranged as it is *just* because of the will of the artificier, and not because these "parts" form a system of members. So the future generations of Von Neumann machines also have the parts they have just because of this original will of the artificer, and not because of any role those parts played in promoting the existence of the first Von Neumann machine.

"Swampman" is apparently a figure from well after Hegel's time; Kreines says that such a

[70]There is already work being done on developing 3-D printable 3-D printers, though I am not aware of any that do not require human assembly at the end.

thought experiment is "entirely alien to Hegel's procedure". But this is not so. As we have already seen, Hegel believed that simple organisms empirically did come into being in the ocean (perhaps they could even have done so in swamps). Hegel also entertained what he considered a bit of scientific speculative fiction unsupported by firm evidence, the possibility that "the Earth was once devoid of living being, and limited to the chemical process etc.", and said of this scenario that "even *if*" this were true at one point in the past, "as soon as the flash[71] of living being strikes into matter, a determinate and complete formation is present, and emerges fully armed, like Minerva from the brow of Zeus.... Such an individual certainly evolves in various ways, but although it is not yet complete at birth, it is already the real possibility of everything it will become." (PN§339Z, PNIII 22-23) The first living being, which emerges in a flash in Hegel's story, is already able to maintain itself against its environment, and to "evolve" and "complete" itself in many ways, because it "emerges fully armed, like Minerva": it comes into being as something that maintains itself against an other, its environment, by metaphorical weaponry – it has certain ways in which it continues to keep itself alive, though its environment may present it with "threats". It is a system of *members*, not of mere parts, though its origin is due to a (science fiction) miracle.

This is not the only passage in which Hegel indulges in the kind of contrary-to-fact speculation which Kreines thinks is novel to our own time. Hegel says in a *Zusatz* to the penultimate paragraph of the middle volume of the Philosophy of Nature, before the transition to "Organics", that "if the products of the chemical process spontaneously renewed their activity,

[71]The German here is *Blitz*, literally a flash of lightning. The image is exactly that found in the Swampman story.

they would be life, and to some extent therefore life is a perenneating chemical process." (PN§335Z, PNII 219) It is self-maintenance which is of original importance to Hegel in characterizing life, as this characterizes the structure-process; the assimilation of a living being's environment to itself is a development of this, the way in which self-maintenance is possible. The genus-process is a further development, another moment of the Idea of life which makes assimilative self-maintenance possible, as it provides content to what will count as the "maintenance" of a determinate "self"[72]; focusing on origins in the way the "Swampman" objection does fails to bring the importance of the genus-process into view, but this process is still at work.

Kreines has his "contemporary Hegelian" concede to the "contemporary Kantian" that this first "Swampman" creature is not genuinely internally purposive, and retreat to the weaker claim (which is all that Kreines thinks is supportable) that the future generations after it will be internally purposive, because they satisfy "Kant's own standard" of having been efficiently caused by wholes of a relevant sort. But, even by Kreines's own lights, Kant's standard is not entirely adequate; Kant failed to distinguish between the different mereologies of a (mechanical) "whole" and its (aggregated) "parts" and of an "organism" and its "members", and so the principle Kant actually gives for how to judge about natural purposes[73] is strictly false. Saved from this confusion, a revised Kantian standard holds that "the *members* of a natural end are present (both as concerns their existence and their form) only through their relation to the whole". But this standard is met by "Swampman" in the first moment he begins to maintain

[72]This point will be important in the final section of this chapter.

[73]See previous chapter, section IV ff. for discussion of this principle.

himself in his new mossy environment: before this point, there were no "Swampman" members, and now there are "Swampman" members because of their functional contributions to the whole "Swampman".

I have spent more time on Kreines than on other commentators who read Hegel on the genus-process as entailing that a living being is one member of a generational chain, with child and parent sharing a kind. This is partly because he gives more details about how to understand this requirement, and partly because the precise way Kreines understands it is idiosyncratic. This idiosyncrasy on Kreines's part is a result of his taking worries about "backwards causation" to have motivated both Kant and Hegel in their thinking about life; this focus leads Kreines to deny that a living being which did not have a fellow instance of its kind in its aetiological past can really be a living being (though he thinks its "offspring" can be). In showing that this view is not Hegel's, I think it is fair to posit a desideratum on any account of what it is to think of a living being as living: such an account must *not* entail positing that the being in question is a descendant of other members of its kind; we must leave spontaneous generation as at least a logical possibility, as Hegel (correctly) thinks it genuinely occurs in nature.

IV. My Reading of Some Hegelian Metaphors

It should now be clear that the Logic's account of the Idea of Life does not commit Hegel to saying anything about more than a single individual of a particular *Gattung*. So why *does* Hegel say those puzzling things about "individualit*ies*" and the like which I quoted at the start of this chapter? I think Hegel is genuinely obscure on this point; the text simply does not have any reading which smoothly fits the text without saddling Hegel with philosophical absurdities, such as an unmotivated introduction of multiple living individuals at this point in his discussion. A

key motivation for my reading is the need to find a reading for this text which is philosophically well-motivated, coherent with Hegel's other doctrines, and which can explain why the text has the puzzling features it does.

The short version of what makes my reading distinctive is that I take Hegel to be trying to motivate the need to distinguish between the actual way a living being lives and merely possible ways it could have lived, without merely assuming that these modal notions must be in play when we think of living beings.[74]To explicate how I read Hegel on this topic, I will concentrate on a central passage from the Greater Logic's account of the genus-process. This passage, on its surface, seems to discuss some kind of relationship between numerically distinct individuals:

> Now because the relationship of the genus is the identity of individual self-feeling in what is at the same time another self-subsistent individual, it is *contradiction*; thus the living being is again an *urge*. Now the genus is indeed the consummation of the Idea of life, but at first it is still within the sphere of immediacy; this universality is therefore *actual* in an *individual shape* – the Concept, whose reality has the form of immediate objectivity. Consequently, though the individual is indeed *in itself* genus, it is not *for itself* the genus; what is *for* it is as yet only another living individual; the Concept distinguished from itself has for object, with which it is identical, not itself as Concept but a Concept that as a living being has at the same time external objectivity for it, a form that is therefore immediately reciprocal. The identity with the other individual, the individual's universality, is thus as yet only *internal* or *subjective*; it therefore has the longing to posit this and to realize itself as a universal. But this *urge* of the genus can realize itself only by sublating the single individualities which are still particular relatively to one another. In the first instance, in so far as it is these latter which, *in themselves* universal, satisfy the

[74]For a detailed discussion of Hegel's treatment of modality that shows how penetrating and subtle Hegel is on these topics, underneath what can at first seem rather opaque and irrelevant prose, see (Burbidge 2007).

> tension of their longing and dissolve themselves into the universality of the genus, their realized identity is the negative unity of the genus that is reflected into itself out of its diremption. It is thus the individuality of life itself, *generated* no longer from its Concept, but from the *actual* Idea. (WdL 773-4, translation modified)

Here is how I read this passage, section by section: Hegel introduces a problem, a "contradiction" in the view of living beings developed up through the end of the discussion of the assimilation-process: we need to posit an additional sort of thought-determination to make sense of how a living being confronts its environment beyond just the bare thoughts of this individual and its immediate environment, though the individual and its surrounding environment seem to jointly exhaust what there could be. What Hegel says we "as yet" have in view is just the individual, the living being alone, and its immediate environment – but also the presentiment that this actual individual is not all it could be. The living being is as it were shadowed by unactualized possibilities, other individuals which "immediately reciprocally" seem to confront one another, seeming to be just as possible as the actual living individual since the environment afforded ways of living other than how it actually lives.[75] But this confusion is cleared up, the "contradiction" resolved, by "sublating the single individualities", both possible and actual, in a common universal genus through which we can understand living beings as actualizing their kind only ever partially – and because it can only be partially, some of these "merely possible" alternative ways of living will inevitably be *impossible*, ruled out by what is actually the case, and so "real" only as moments of an *abstract* genus. Making sense of living individuals as developing

[75]Compare these problematic "other individuals" to the "possible fat man" and the "possible bald man" in Wyman's doorway, in Quine's "On What There Is" (Quine 1948 4). In both cases, thinking of merely possible beings as possible in the same way as actual ones, except for the fact that they *happen* to not exist, leads to puzzlement about *why* this happens to be, and how exactly all of these equally-possible individuals are related to one another.

themselves through converting their environments into a means for their own existence thus requires thinking of general kinds which these living beings instantiate – kinds which exist only abstractly, as general ways of living that individual living beings perpetuate without being aware of them.

I will now cover this line of thought in more detail: so far in the development in the Logic, *before* the genus-process is thought through, we have in view the individual living being which maintains itself by means of assimilating its environment to itself. This environment is the sort of thing which cannot be in view without the living individual being in view; it is not an indifferent nature, but is what the living individual makes into its own means of existence, and it is only by these means that the living individual lives. But this environment is not simply what the living individual *in fact* uses as its means; the possible means for it to take advantage of outstrip what it in fact uses, and there are ways to live that are *not* ways the living individual does live.[76]

These ways of living are ways of living by which the living individual does not live – this contradiction, of ways of living which are not ways in which living occurs, is the "contradiction" with which the passage opens. Hegel's contrast is of the actual living individual with its "self-feeling" and the other "living individual" which is not actual. This other "living individual" is a mere potential for actuality, is merely a way the living individual *could* live, but it has as much a claim to be *the* way the living individual lives as the actual way it feels itself to be living: for both are "possible ways of living".

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[76]Here I summarize my discussion of the assimilation-process from the previous chapter, which is what Hegel has laid out up to the point at which this passage begins.

So far, the "genus" as a universal is not in view; we have in view only the living individual, its environment, the other ways of living this environment affords, and the realization that this living individual is far from exhausting its options for being just the living individual it in fact is. It is this lack of having the universal in view which causes the contradiction with which the passage opens, and which makes it seem puzzling that there could be non-actualized potentialities for the individual living being. This puzzle will be resolved by getting the universal in view, by recognizing these unactualized potentialities as ways that *this kind of thing* can live, even if a given individual living thing *of this kind* does not in fact live in this-or-that particular way. Grasping the living individual as a member of a genus allows us to see what to do with the troublesome merely possible "other living being" which confronts the actual living being: it, and all of the other possible ways it can live, must be grasped as really just being ways in which this particular kind of living being can be instantiated.

For the living individual, as distinguished from a knowing subject (the next stage in the Logic), all that is ever in view is the immediate ways in which it might live at the moment; it never adopts a synoptic view of itself or the kind of life it lives, but merely in fact lives that kind of life, unreflectively. This is why Hegel says this form of the Idea is "immediate" and "actual in an individual shape": it is a shape which is not a product of reason or governed by reflection, but is *merely* the kind of life it is, functioning as a steady background for the living individual to work within, produced by the contingency of nature. For the living individual, this kind of life is only present to it implicitly, in the form of opportunities to act in various ways: the living individual only grasps its genus, only has its genus "for it", present to it, in the form of "another living individual", in the form of a different way of living than it is in fact living at the moment

being equally a way that it *could* be the living individual it is. As Hegel says, in a sense these two "individuals" are identical – what is *merely possible* is just what is merely possible *for this actual living individual*, and this actual living individual is only the actualization of some of these possible ways of living; they cannot be or be conceived without each other. But, so long as we do not have the genus in view, as the living individual itself never does, this belonging-together of the living individual and the merely possible living individuals, "the individual's universality" across the living individual and its possible opportunities, is "as yet *internal* or *subjective*" – it is something we know should be the case somehow, but we can't make out *how* that might work, any more than the individual living brute can.

The way it can work is if we "sublate the single individualities which are still particular relative to each other", if we cease to view them as equally *individualities* and merely *relative to each other* (as though "actually existing" merely indexed *which* merely possible individual we had in view), and instead grasp them both as united within the thought of each of them as moments of our thinking of the universal kind of living thing at issue. Coming to see that the living individual and its unactualized possibilities for action are both intelligible only against a general background, which is more general than anything the living individual itself ever has in view, is to recognize the necessity of the genus-process as a moment of the Idea of life, and to grasp a particular existing species as itself an "actual Idea".

Hegel says that coming to recognize that this is how it is with living things generally, that they live *as a particular kind of living thing*, is to come to see them as "actual Idea". Part of what he means by this expression is that knowledge of the universal form of a kind of living thing gives us knowledge of living individuals which fall under it, even before those individuals are

presented to us in experience. This knowledge is non-accidental, and concerns what, following Elizabeth Anscombe's discussion in "On Promising and its Justice", have been called "Aristotelian necessities" or "Aristotelian categoricals", a species of knowledge of non-quantified generalities ("platypuses lay eggs" as opposed to "some platypuses lay eggs" or "all platypuses lay eggs").[77] This knowledge is non-accidental, so it is necessary in a sense: the sense of necessity which is at work in "It is necessary for the platypus to electrolocate, for it closes its eyes and nostrils while underwater". If I know this fact about platypuses, then I know of Abby, given only that she is a platypus, that she must electrolocate. If she does not, she shall quickly starve to death, and then we shall sadly have no more Abby. So I either know this fact about Abby the platypus, that she electrolocates, or there will soon be no Abby for me to be so much as wrong about. I do not need to bring Abby to my senses to know if it is true of her that she electrolocates, but only to learn if it is false (and then it is further necessary that I find someone to help poor Abby, if I can – another form of Aristotelian necessity). My belief about this is not accidentally true if it is true, but it is accidentally false if it is false; thus the belief is knowledge if true, as it is then nonaccidentally true belief.[78] This knowledge about Abby is not empirical, for I do not need to check and see how it is with Abby in particular to know she must electrolocate; it is also not *not* empirical, for it is a contingent, empirical, fact about platypuses that they electrolocate, and only in this way find shrimp to eat. Neither the senses in abstraction nor

[77]Anscombe introduced this language in (Anscombe 1969), but its recent popularity owes to Philippa Foot and her student Michael Thompson, see especially (Foot 2003a) and (Thompson 2008).

[78]For a defense of this general view of knowledge, see (Rödl 2007), chapter three, and (Kern 2017).

reflection in abstraction provide us with this sort of knowledge, and consideration of our faculties abstractly will prevent us from understanding it as knowledge. As Sebastian Rödl and Michael Thompson have argued, thought of the living is an area in which philosophical empiricism has lead to much misunderstanding.[79] To grasp how thought really works in these cases, we need to comprehend how we can have conceptual, universal, general, knowledge which is at once knowledge of perceivable, individual, particular, objects – knowledge which is "the unity of the Concept and objectivity", or what is called by the Logic *Idea*. Here Hegel's "Concept" is no longer a mere concept, but is a "concept of reason"[80]: a *Begriff* which actually enables us to

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[79]See (Rödl 2007), (Thompson 2008). Thompson has said his aim is "liberating philosophy from its self-imposed empiricism". It is worth noting that Rödl and Thompson concern themselves with *philosophical* empiricism, with empiricism as it shows itself in theses about experience and knowledge. Insofar as empiricism does not try to express itself in theses, but shows its benefits practically, it does good service to thought by promoting fruitful inquiry and warding off metaphysics. This is the moral of Van Fraasen's The Empirical Stance (Van Fraasen 2002): saving empiricism involves rejecting what many philosophers have taken to be all there is *to* empiricism. A similar moral can be drawn from the case of Wilfrid Sellars, who McDowell argues saved empiricism by his attacks on it (against Robert Brandom's reading, which has Sellars simply attacking empiricism until it died); see especially McDowell's essay "Why is Sellars's Essay Called '*Empiricism* and the Philosophy of Mind'?" (McDowell 2009). The value in empiricism as I see it is the same as its chief problem: its anti-dogmatism. In directing our attention away from fixed ideas and towards what is importance for the ongoing development of inquiry, empiricism is healthily anti-dogmatic – but this very feature can be hard to distinguish from a hostility to knowledge-claims which degenerates into the worst kinds of skepticism, as in Hume.

[80]In the Encyclopedia Logic Hegel mentions this distinction as one familiar to his audience: "people do habitually distinguish between mere concepts of the understanding and concepts of reason" (*Man pflegt demgemäß wohl auch bloße Verstandesbegriffe und Vernunftbegriffe zu unterscheiden*); Hegel gives the example that "the definition of God set up by what is called Deism is just the understanding's concept of God, whereas the Christian religion, which knows God as the Trinity, contains reason's concept of God." (EL§182Z 259) I think it is significant here that it is "the Christian **religion**" (*der christliche Religion*) that is said to contain the *Idea* of God; Deism, which has never been a religion but only a metaphysical view, is poorer than religion on this point. As I read Hegel, religious practice, but not armchair metaphysical speculation, can properly grasp God "in spirit and in truth"; God can properly be conceived of

begreifen, to *comprehend* objects by thinking about them in such a way that our thinking of them is just knowledge, lacking nothing that comprehension should include. In this way they do what concepts are supposed to do, which is why Hegel calls Ideas "true concepts": other kinds of concepts are lacking in some way or other, require supplementation from another kind of representation to actually *work like concepts should*, to enable us to comprehend things.[81]

For a contrast to bring out Hegel's view better, consider a view of concepts on which they are essentially abstract classifications, grouping similar objects together. On such a view, knowledge of anything perceptible will have to be non-conceptual, and conceptual knowledge will be intrinsically false, inadequate to its objects: "however much the rigid and sharp boundaries between concepts are divided through increasingly minute definition, they will never be able to reach the fine modifications of the intuitive", as Schopenhauer put the view: "This characteristic of concepts makes them similar to the stones in a mosaic (and means that they always approach intuitions only asymptotically)". (Schopenhauer 81-82, WWRI §12) Just as placing no amount of mosaic-stones will result in a continuous image, no amount of knowledge of classes under which an individual falls will be knowledge of that individual itself; such

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only by those for whom this conception is of practical significance, is a Hegelian way of putting Anselm's old line that "the fool says in his heart that there is no God". The foolish understanding endorses a metaphysical proposition which reads "There is no God"; only reason is able to see that this is self-contradictory, for only reason can properly interpret what appears to be a name in this proposition by thinking the Idea of God alongside it. Echoing Kant, Hegel says that "Only from the moral life and by the moral life is the Idea of God seen to be free spirit; outside the ethical spirit therefore it is vain to seek for true religion and religiosity." (PS§552 283) Armchair metaphysical speculations are thus unable to so much as think of God; their efforts systematically distort the Idea of God.

[81]The general topic of Ideas in Hegel will be returned to in my future work, once enough concrete material has been laid out to make clear why these issues are so important. In this dissertation I focus only on the Idea of life, with a few broader remarks in my final chapter.

classificatory knowledge can at best be used as a tool to identify individuals available to us in another way, just as Schopenhauer held – as though all conceptual knowledge was like playing the boardgame "Guess Who?", where all possible individuals we might want to call out are simply given to us before we go about conceiving of ways to describe them.

In Faith and Knowledge, Hegel writes (quoting KdU 272, 5:402): "In an intuitive intellect concepts (which *merely* concern the possibility of an object) and sensuous intuitions (which give us something without allowing it to be known as object) equally disappear." (GuW 88) In organic species-concepts the general ways of living which we think via these concepts are not merely "logical possibilities" (consistent with the law of noncontradiction, which Kant called the "principle of analytic knowledge" (A151/B191)), but are "real possibilities": they are possible only because they are (partially) actualized by living beings. It is no longer possible for anything to be a Stellar's Sea Cow, and in the future there will arise new ways of being an animal which are not possible at present. This Aristotelian style of thinking about the possibility and actuality of generals is contrary to Kant's more Platonistic-Leibnizian view on which actualities merely realize some pre-established possible ways the world might be (so that Kant can, but Hegel cannot, make sense of a notion of a "totally of realities" in abstraction from what contingently exists, as Kant does in his discussions of God's existence and nature in the first Critique). This is why for Kant the "Idea of an intuitive understanding [is one] for which possibility and actuality are one" (GuW 88, quoting (KdU 272, 5:402)); for Kant the thought of what is possible depending on empirical, historical facts is so strange as to seem to collapse the actual-possible distinction entirely, and so he finds no use for the sort of contingent universals that Hegel's "Organics" traffics in. Similarly, Kant's "intuitions which give us something without allowing it

to be known" vanish in Hegel's "Organics", for the kind of singular reference which Kant and Hegel agree in calling "intuition"[82] occurs in Hegel's "Organics" only when we can also bring these referents under general species-terms (and pick them out from the environments they live in), and so the possibility of an intuition of a living being is always already the possibility of knowledge of it *as* a living being. In an Idea of a species-form, what can be thought as possible must be given to us in experience, and what can be given to us in experience can be known in ways peculiar to the sort of lifeform it is.

V. Queering the Impotence of Nature

To make better sense of how I understand the genus-process in Hegel, I will take up a different metaphor, this time from his Philosophy of Nature, one which other commentators have drawn attention to: the "impotence" of nature. Thomas Posch gives a typical account in A Companion to Hegel:

> The property of nature that makes it impossible for spirit to comprehend everything in it as necessary or to derive all its features even has a well-known proper name in Hegel's system: it is called "the impotence of nature" (*die Ohnmacht der Natur*). This

[82]Hegel praises Kant for this distinction in *Faith and Knowledge*, saying "this can only be described as excellent and as one of his purest and most profound concepts" (GuW 122) in the course of criticizing Jacobi for not being able to clearly keep in mind Kant's distinctions between "perception", "intuition", "formal intuition", "form of intuition" etc. (Hegel notes that "Kant's terminology is not in itself very clear.... deriving, as it does, from a culture that is dead and gone it hinders Kant's exposition" (GuW 120)). On the question of how to understand "intuition" in Kant, Hegel sides more with Hintikka than with Parsons on how to understand Kant's thinking here: "'Single, individual representations' (as opposed to the concept) means the same in Kant as intuition" (GuW 122) is the concept which Hegel singles out for praise. The singular reference of an intuition is thus what Hegel sees as most important, and not anything like its phenomenological "feel" or its having been "given" in a particular way. See (Hintikka 1972) and (Parsons 1992) for this debate.

> term reflects the fact that any – even the most sophisticated – system of classification of natural genera and species, as well as any attempt to find basic forces, pure substances, and so on – in short, each and every systematization of nature – is confronted with transitional phenomena, borderline cases, and exceptions that do not occur in pure logic. (Posch 182)

Though Posch mentions that nature's "impotence" is relevant especially when thinking of "systems of classifications of natural genera and species", I think the importance and radicalness of this notion for understanding Hegel's views on biological taxonomy has not been taken seriously enough by the existing literature. To get at this importance, I want to tarry for a bit on this odd metaphor as a way to appreciate Hegel's view of the relationship between nature and spirit.

It is a trope of early modern science that science, rationality, and mind are masculinized, and nature is feminized as a contrast to all three of these. This trope can be found at work in Hegel (as in his philosophical retelling of the Fall of Man at (EL§24Z3 61-62) or his typically modern assertion that "a state of nature is a state of violence and wrong, of which nothing truer can be said that one ought to depart from it" (PS§502 248)); it is a basically oppositional picture of nature and mind. Mind is active, and works upon a passive nature which receives it; this is the Aristotlean picture of conception, with woman providing merely the matter upon which form operates (this picture too can be found in Hegel: "the male is the active principle; as the female remains in her undeveloped unity, she constitutes the principle of conception" (PN§368Z, III

175)[83]). But this oppositional picture has mind and nature as two basically different sorts of things, engaged interactively (albeit in a rather one-sided manner); this sort of dualistic picture of nature and mind is something Hegel wants to sublate in his Philosophy of Nature.[84] Hegel needs a better picture for characterizing our relationship with nature than the ones common as early modern tropes (and still common today); we are not simply another thing of the same sort as nature, but set in opposition to it and dominating it. Taking inspiration from Evelyn Fox Keller's reading of Francis Bacon (Fox-Keller 1996), I want to focus on one of Hegel's metaphors: by focusing attention on Hegel's metaphor of the "impotence of nature", I think we can find a way to think alongside him without the oppositional framework that dominates most thinking on the question of nature.

Hegel speaks of "the impotence of nature" (*Ohnmacht der Natur*) in PN §250; this is in opposition to the Idea, which EL §6A notes is "*nicht so ohnmächtig*" (this is in the course of commenting on the notorious "*doppelsatz*" from the Preface to the Philosophy of Right, that "the actual is rational and the rational is actual"). "*Ohnmacht*" has a connotation of fainting, of falling into unconsciousness, and in this sense Hegel's phrase has a clear connection with the famous picture of nature as "slumbering intelligence".[85] Nature is like mind, but with the life knocked out

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[83]Amusingly, in this section Hegel describes the clitoris as "inactive feeling in general; in the male on the other hand, it has its counterpart in active sensibility, the swelling vital, the effusion of blood into the corpora cavernosa and the meshes of the spongy tissue of the urethra." (PN§368Z, III 175) Marie von Tucher was said to have been scandalized by some of her husband's writings on religion after his death; one imagines this section (which goes into some detail about various parallelisms between the sexes) would not have made her happy either.

[84]I will return to the sublation of this dualism in chapter six.

[85]This phrase is connected with Schelling; Google Books shows this as early as 1919 in English, but the phrase doesn't seem to actually be present in Schelling's corpus – Hegel's

of it. "*Ohnmacht*" is not the German word used for impotence in a sexual sense; for that German uses "*Impotenz*". (There are jokes to be made about Schelling's *Potenzen* here, which I leave to the imagination of the reader.) But Hegel first mentions this impotence as "*dir Ohnmacht der Natur, die Begriffsbestimmungen nur abstrakt zu erhalten...*", an incapacity of nature to maintain conceptual determinations (except abstractly). So Hegel's "*Ohnmacht*" has a broad sense, as a general failure on the part of nature to be able to uphold itself without collapsing into disorder. Spirit, in contrast, does hold itself together in this respect; the Idea is "*nicht so ohnmächtig*" as to be unable to hold itself together while extending beyond the mere "should" to also make itself "actual": "*Diese [Wissenschaft] hat es nur mit der Idee zu tun, welche nicht so ohnmächtig ist, um nur zu sollen und nicht wirklich zu sein....*" (EL §6A 30). Spirit is "potent" enough to extend what "should" be into actuality; nature is "impotent" and fails to lay out conceptual determinations in a rational manner, always leaving a gap between "what is" and "what ought to be".

But on this picture, nature is not simply opposed to spirit as what spirit acts upon; spirit acts only with itself, and so nature cannot simply be what passively receives its formation from spirit. Nature and spirit are not two species of a common genus, set in opposition to one another and in conflict (with one dominating the other, nature subordinated to spirit), but are two different ways of being the same kind of thing:[86] spirit is what nature is, but better at it; it better

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Schelling quote in EL §24Z is that nature is "petrified" intelligence, not "slumbering"; some of the fame of the phrase is likely due to its use to describe Schelling in the popular novel "Sophie's World" (Gardner 1994).

[86]Spirit and nature are united more by what Anton Ford in "Action and Generality" (Ford 2011) calls "essential generality", like what unites the species "healthy body" and "infirm body", and not merely what he calls "categorial generality" (the sort at work in the species "horse" and

shows what it is to be nature, to be the object of thought. Spirit is, as Hegel says, "the truth of nature" (e.g., EL§96Z 153): it is what nature shows up as being "falsely", as being only by being in disagreement with itself, with its concept.

Nature reveals itself as unable to produce anything which is rationally ordered; by nature it produces irregularities and monsters, and maintains no rational ordering on its own account. Hegel writes that

> The difficulty, and in many cases the impossibility of finding clear distinctions of classes and orders on the basis of empirical observation, has its root in the inability of nature (*der Ohnmacht der Natur*) to hold fast to the realization of the Concept. Nature never fails to blur essential limits with intermediate and defective formations, and so to provide instances which qualify every firm distinction. Even within a specific genus (*Gattungen*) such as mankind, monsters occur, which have to be included within the genus, although they lack some of the characteristic determinations which would have been regarded as essential to it. (PN §250Z, I 216, translation modified)

On my reading, the impossibility "in many cases" of finding "clear distinctions of classes and orders" in nature has a deeper root than Hegel lets on in this remark from the Introduction to the Philosophy of Nature: the sorts of distinctions that can be drawn in nature are not limited to

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"seal" as types of animal) or "accidental generality" (the kind at work in "snub nose" as a type of nose). What nature and spirit are can only be understood by understanding both of them together, and spirit's self-understanding plays a privileged role in understanding what nature is. As Hegel says, "nature is not just something fixed and complete on its own account, which could therefore subsist even without spirit; rather, it is only in spirit that nature attains to its goal and its truth. Similarly, spirit, for its part, is not just an abstract world beyond nature; on the contrary, it only genuinely is, and proves to be spirit, insofar as it contains nature sublated within itself." (EL§96Z 153)

generally valid dichotomies which are problematized by borderline cases, but are always-already problematic, with the *inevitability* of borderline cases and "monsters" as only a sign of the peculiar way that rational forms can be found to be at work in nature. Spirit on the other hand gives birth to rational forms in producing itself from itself; where spirit establishes something as essential for itself, it can maintain this essentialness through many travails, and issue itself forth from itself in its full self-determined complexity.

This (literal) self-conception is not exactly a feminist picture, but it is at least an interestingly different one than the oppositional picture found throughout the rest of modern philosophy: rather than treating nature as something which exists outside of mind and which mind works upon (in order to gain knowledge theoretically and practically), for Hegel nature is just what fails to satisfy the demands thought makes of itself – so what satisfies thought must lie outside of nature, and not merely outside of thought, in the return of thinking to itself from out of its own self-alienation.[87]

Making sense of what nature is for Hegel will then involve finding a way to make sense of a realm which is constitutively less orderly than thinking demands its own products must be. This is how I understand the "impotence" of nature in general for Hegel, as contrasted with the potency of spirit: any order that we can discover in nature will have something "second-rate"

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[87]Fichte in his System of Ethics writes that "Freedom is our vehicle for cognizing objects, but the cognition of objects is not, in turn, the vehicle for cognizing our freedom" (Fichte 79). Allen Wood has suggested (in conversation) that this might also be put as saying that "Freedom is our vehicle for conceiving of nature, but our cognition of nature is not a way of conceiving of our freedom." Understood in this way, Hegel would agree with Fichte – but I think Hegel would not be happy with the implication that all knowledge of "objects" is knowledge of "nature", for Hegel (against Fichte) thinks that we subjects are objects, too. It is regrettable that Fichte never wrote in more detail about the philosophy of nature.

about it, some limitation that spirit might wish to overcome. The way I see this working itself out in relation to living beings is through the absence of anything like a "necessary principle of orders" (PN§370Z, III 180) in nature that taxonomies might aim to replicate. Instead of the realism about taxonomies that such a "necessary principle of orders" would involve, I read Hegel's discussion of taxonomies as describing an approach I will call *species-constructivism*.

VI. Species-Constructivism

The view that I call Hegel's "species-constructivism" holds that there is no fact of the matter about how to organize species beyond the plurality of ways we have found to be convenient; nature is too weak to have any particular ordering of species unique to herself that we might strive to correspond to in our taxonomic efforts.[88] My labeling Hegel a "constructivist" about living kinds may seem obviously, even egregiously, mistaken, for Hegel denies that we can construct taxonomies however we please, grouping any sorts of resemblances with any others. As Hegel says, "if the difference [between animals] is to be a true one however, it has to belong to the animal itself, and should not be a distinguishing feature which is merely selected by us." (PN§370Z, III 191/192) But, as this line of thinking goes, if we cannot select resemblances as we please, then Hegel must be a realist about living kinds: the differences between animals cannot be features we select as differentiating them, but must "belong to the animal itself" as true moments of the rational order present in nature. But this does not capture the distinction Hegel cares about; he is not making a metaphysical claim about how we should evaluate taxonomies, but a practical one about how we should construct them. "*So darf es nicht unsere Unterschiedung*

[88]This shows how Hegel would reply to Goethe's worry in "Experiment" essay about the experimenter's desires getting in the way of Objective Nature; this will be discussed in more detail in Chapter 6, section XI.

durch Merkmale" is what Hegel says we must not do; his point is that we must not simply select any "mark" by which we might specify a class of animals (such as "spotted", "large", "belonging to the emperor"), but must pay attention to how the animal *acts*, how it *lives*, if we are to really think in terms of living Ideas of *Gattungen* as opposed to mere "concepts of the understanding". Hegel's contrast is not between differences which are "really in nature", carving it at the joints, versus differences we introduce into nature; it is a contrast between differences which matter to the animal versus differences which are irrelevant to it. By means of their teeth and claws animals "distinguish themselves from one another" (PN§370Z, III 191); nature red in tooth and claw shows which animals are predators and which are prey, which hunt and which graze. But to recognize that variations among teeth show that some animals graze on plants and some tear flesh (and some do both, as we do) is not to say that "carnivore, herbivore, omnivore" mark out "natural kinds", but only that we can classify animals by means of their vital activities through looking at their teeth. In the course of our inquiries, this is something we have learned about how to construct our accounts of animals: it is important that teeth are used to eat with.[89]

I used to think that Hegel was a sort of pluralist about living kinds: that the conclusion he drew from the indeterminacy of living kinds (owing to the "impotence" of nature) was that there were simply multiple different, and equally "correct", ways to categorize living beings. For instance, we might categorize them along the lines of the elements – the birds of the air, and the

[89]I call this a form of "constructivism" instead of "conventionalism" because I think conventionalist views seem committed to a dualism of a conventional scheme and a non-conventional Given which Hegel would surely reject. Importantly, for the species-constructivist there are no facts about living beings which are not constructed in the ongoing process of inquiry; any attempt to call some of these facts "conventional" as opposed to others would thus fail to find purchase.

fish of the sea, and the beasts of the earth – or as approximations to the form of humanity as an apex of nature ("the monkey is a parody on man" (PN§370Z, III 192)). But on rereading Hegel more carefully, I found that he does want to harmonize these approaches into a single hierarchy of lifeforms, so that what I had taken to be simply different approaches are regarded by Hegel as abstractions from a single more encompassing approach. But I think Hegel remains as committed to the "impotence" of nature and the lack of a rational structuring to living kinds as I took him to be on reading of him as a pluralist. Hegel's view does not simply reject the thought that nature has "One True Taxonomy of Natural Kinds" (which would be the rational ordering he denies can be found), but also denies that nature has a *plurality* of kind-relations present in it, different sets of which we might pick out depending on our present interests.[90] My current view of Hegel is that according to him taxonomists rightfully create orderly taxonomies which nature does not fully honor, but these taxonomies are not therefore "falsified" – because in creating them we are not trying to capture "kinds" in nature at all – and so our accounts of living kinds are better treated as tools to be used in capturing the phenomena, not as self-standing sets of claims whose truth can be considered in isolation from the work we are having them do for us.[91]

To defend this rather sketchy proposal, I will describe how Hegel (in part of the long

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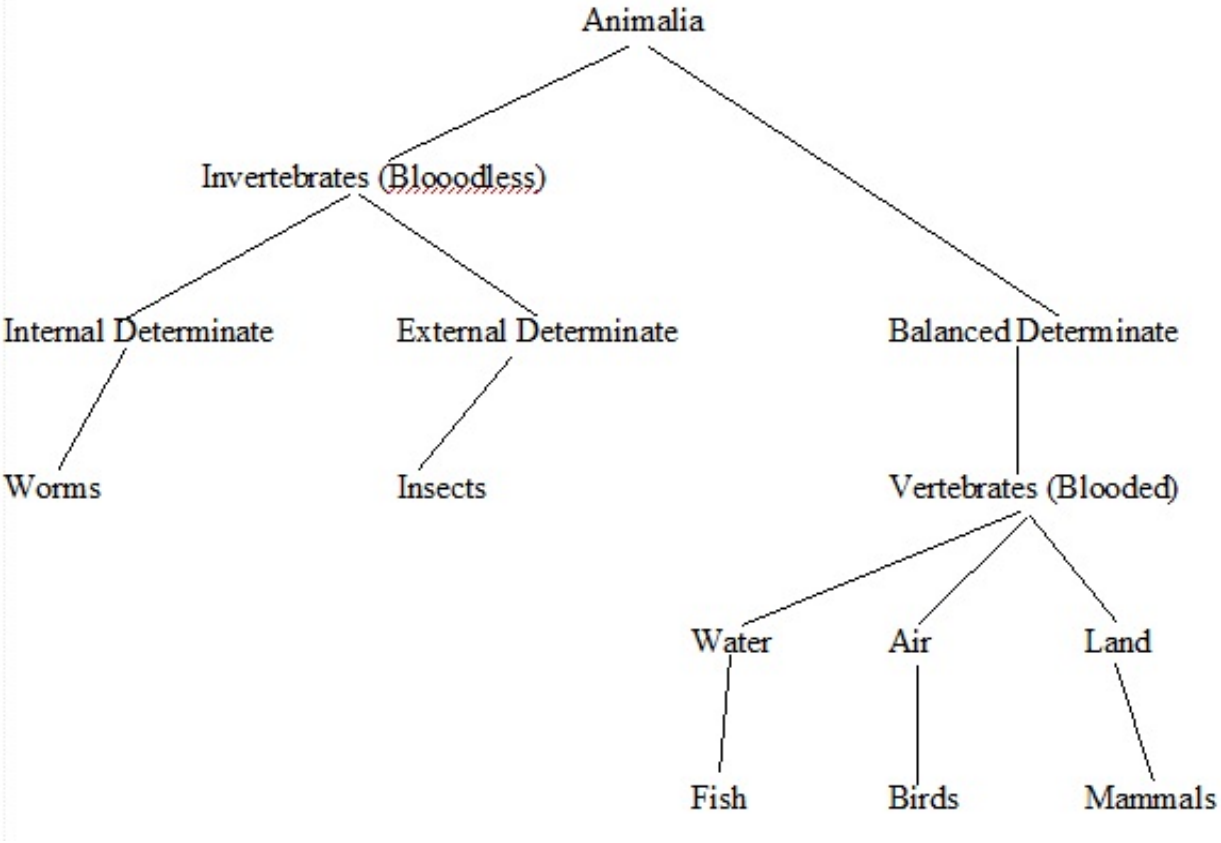
[90]Thanks to Anton Kabeshken for convincing me of the importance of drawing this distinction when rejecting "realisms" about natural kinds.

[91]It is important to note that many claims of the form "Fs θ" are still straightforwardly truth-evaluable on the view I am articulating; even if nothing in nature settles the question of whether "hound" is a taxon we should use or not, "Hounds lay eggs" is simply false and "Hounds drink water" simply true. The truth or falsity of claims like "Whales are fish" better brings out the sort of issue I am concerned with here: nature does not cleanly settle this issue for us, but leaves us free to argue about, e.g., whether a tax on fish imports should apply to whale bacon or not.

Zusatz to PN§370) narrates the development of animal taxonomy up to his own day: Aristotle first invents the blooded/nonblooded dichotomy; this is found to be unclear owing to what we are to count as "blood" (does it have to be red, for instance, or merely fluid?). Linnaeus replaces this Aristotelean archdistinction with his sixfold distinction between mammals, birds, amphibians, fish, insects, and worms. Lamarck then salvaged Aristotle's distinction in terms of the distinction between vertebrates and invertebrates (which at least saves Aristotle's extensions, if not his intensions). Cuvier then reconciles all of these into a single system which arranges animals in terms of greater or lesser "perfections", and this gives us our best current system of taxonomy (in Hegel's judgement, at the time). Cuvier's taxonomic system held on to everything we had before and lets us divide animals up elegantly. Some animals, such as the platypus, are not captured in the resulting scheme of animal kinds, but this merely shows how "imperfect" (PN§370Z, III 189) nature can be: we find these categories helpful, and so we divide up animal nature by means of them, treating the miscreants as "mixtures" of some of our categories rather than exceptions that show a flaw in our categorial scheme. It is freely acknowledged by Hegel that, viewed in terms of Cuvier's taxonomy, nature has animals that move between taxons, such as the *Cetacea* where we see "land animals that returned to water" (ibid).

Hegel's Taxonomy of Animal Life



Hegel wants to find a unified way to present all the then-current taxonomic systems in a single account; he achieves this by abandoning "the necessary principle of orders" (PN§370Z, III 180) in nature's kinds, and so is able in a single schema to combine Aristotle's blooded/not-blooded dichotomy, Goethe's "vertebrate types", Lamarck's vertebrate/invertebrate distinction,[92] Linnaeus's sixfold scheme, Cuvier's scale from imperfect to perfect (roughly, the chart above goes from imperfect to perfect as one proceeds from left to right), and even the Biblical division into "fish of the seas, birds of the air, and beasts of the land". This schema is supposed to be the most useful one available for thinking about the varieties of animal kinds, given the state of the sciences at Hegel's time.

Hegel's final scheme of division of animal kinds is in terms of the elements: blooded vertebrates fall under the three heads of "water", "air", and "land". Reptiles Hegel treats along with amphibians and fish as water-animals (one imagines turtles figuring larger in Hegel's imagination than lizards here); birds are the air-animals, and mammals the land-animals. But all three of these elemental divisions are violated by nature: the platypus shows us a bird that lives in water; the ostrich a bird that lives on land; the whale a mammal that lives in water; the bat a mammal that flies through the air; amphibians are fish that move on land; and flying fish are fish that can dwell in the air.

Hegel's goal in the Philosophy of Nature is to provide a synoptic view of the "nature" disclosed by the empirical sciences, and so the plurality of animal taxonomies is prima facie a

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[92]Hegel identifies this distinction with Aristotle's blooded/not-blooded dichotomy, in a blatant attempt to save the ancient archedistinction Aristotle used from obsolescence. This is a place where Hegel's philohellenism lead him into a blunder (as it did elsewhere in his philosophy; see Appendix I), as there exist blooded invertebrates.

problem for him – it seems a possible threat to the possibility of a synoptic account of nature, for we might worry about which of these accounts of the orders of the animal kingdom tells us what that order really is. Hegel dissolves this difficulty by denying there is such an order to get uniquely correct, as though our taxonomies may or may not correspond to one found lying in nature herself (perhaps as an echo of the words God spoke in the Days of Creation). If we reject this ideal, Hegel then shows us a way to harmonize the various taxonomies and taxonomic strategies then in use, and so lays out for his students a synoptic view of animal classifications. In this way it can be appreciated that even in animal life nature does not attain to the stable distinctions of form which spirit is capable of establishing for itself; the "most perfect" organism, man, still retains vestigial rudiments (such as the thyroid gland, which Hegel claims is functionless (PN III§370Z 185)) and so not only must the perfect be looked at to comprehend the imperfect,[93] but the "perfect" must be understood by looking to the "imperfect": the lower is not only a weaker form of the higher, but the higher shows that it has undeveloped organs which manifest themselves actively in the "lower organisms". So even the general attempt to line up animals in terms of "higher" and "lower" stages of development, which was the way Cuvier practiced in his comparative anatomy, shows itself to be not an ordering that nature herself follows independently of us, but one we use to shed light on phenomena and make morphological similarities and distinctions intelligible to ourselves. This effort paid dividends, as

[93] As Marx said in the *Grundrisse*, "Human anatomy contains a key to the anatomy of the ape. The intimations of higher development among the subordinate animal species, however, can be understood only after the higher development is already known." (Marx 1857) In making this point Marx illustrates a general moral about what is needed to make sense of a development as a *progressive* one: this can only be done retroactively, not prospectively. When we call a development a progressive one before it has come to its completion, we speak from hope rather than knowledge.

the higher/lower development picture of Cuvier enabled him to elaborate the sorts of resemblances that Darwin would provide a historical explanation for.

From the above points, it follows that on a constructivist view such as I have attributed to Hegel, individuation of living individuals can vary depending on choice of a taxonomic system. This is because different taxonomies will have different types of vital kinds, and different types of vital kinds means different criteria for individuation of living individuals. Thus there should be no unique answer to the question "how many individuals in, e.g., a clonal colony".[94] It also follows that there can be no unique "ideal type" for any existing individual living being, in the sense of a model that it might live up to – different taxonomies would lead to different ways of carving up the possible space for such "ideal types", but a plurality of such models means that instantiating one of them will not ensure that an individual is "being a good instance of their kind". "Flourishing" with respect to one vital kind may thus not be "flourishing" with regard to another, and as each sort of kind has equal claim to being how we should think about living beings *qua* genus, I think there are Hegelian grounds for being skeptical of Footean-style "ethical naturalism".[95] Living individuals, simply as living, are not neatly individuated, and they do not

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[94](Englert 2017) argues that ensuring this sort of individuation obtains for all objects is the entire point of Hegel's "Idea of Life". But Englert is also forced to regard all objects so individuated as having internal purposiveness, which I regard as a *reductio* of his view.

[95] Michael Thompson in (Thompson 2004) argues that in viewing a jellyfish we implicitly refer to "the" kind of jellyfish it is, which assumes the possibility of definite reference here. Sebastian Rand's "What's Wrong with Rex?" argues that Hegelians should not try to make sense of any kind of good in terms of "being a good instance of its kind"; even claiming that Hegel "clearly disallows evaluative judgements about animals". (Rand 2013 68) But Rand goes too far in this, unless he wants to restrict "evaluative judgements" to mean only judgements in terms of human goodness or badness. Hegel is aware of the fact that thinking of an animal as injured or infirm requires the sort of comparison to a kind that Thompson discusses (as Rand admits on p.77: "in some sense, Hegel can endorse this analysis"), but simply is not committed to the

have norms which apply to them unproblematically; this is the "impotence" of nature that spirit is supposed to improve on by developing norms for itself that clearly settle the question for us of who we are and what we are to do.

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further claim that sickness/health are decidable for each living individual. What counts as "sick" or "healthy" can be relative to kind-considerations without treating these as fixed (as disability advocates have been keen to get us to notice, what counts as a "healthy" body is socially produced and contested). But Thompson is aware that "nobody's perfect" (Thompson 2008 72) and typically no individual satisfies all of his "natural-historical" judgements at once, so it's not clear how deep these sorts of thoughts should cut against his program – it is not clear how deep the need for a unique set of virtues goes in his version of "virtue ethics", given that he already has this gap between the virtues and their realization. My worry here is similar to the idea that there is no such thing as being "perfectly healthy" – that as Hegel says the animal is "originally diseased" and will inevitably die to something or other. The converse of this is that, as Rand says, we can say of Rex the three-legged dog that "nothing is wrong with him; he's doing just fine." But the fact that we can say this just shows that talk of sickness and health in animals depends on background considerations; judging the health of an animal is something that doesn't make sense without a considerable amount of scaffolding. If this sort of slipperiness in terms of the norms by which we judge of the "flourishing" of animals can't be pinned down pretty firmly, I am pessimistic about the chances for any Footean naturalisms in ethics: if we can say of a vicious scoundrel that he is "doing just fine" because he has found a way to get on while being horrible, then it seems to me that this is not a promising route to make sense of virtue-talk.

Chapter Four: Intuitive Understanding

I. Introduction

In the previous chapters I began my account of Hegel's critique of Kant by articulating a way of conceiving of certain natural objects that Kant and Hegel both think we have: thinking of living beings as *internally purposive*. Hegel holds that this way of thinking is a way of knowing living nature; Kant holds that this way of thinking is merely of heuristic value, and can never be a way of knowing, at least never for humans. In this chapter I will look at how Goethe tried to reply to Kant on this point, especially as explicated by Förster. This will provide context for understanding Hegel's own reply to Kant in his Philosophy of Nature in my final chapter.

Goethe had early in his career sought what he called the *Urpflanze*, the "primordial form" of plant-life which would show what all plants have in common. Goethe's reflections on this topic continued throughout his life, and led him to an encounter with Kant, importantly mediated by conversations with Herder and Schiller, which would provide him with the means for thinking through what it was he wanted to find in his search for the *Urpflanze*. Goethe focused especially on Kant's brief discussion of "synthetic universals" in articulating his own alternative to the Kantian view of inquiry. Goethe was a prominent singular influence on Hegel's development of the philosophy of nature, and so understanding his views promises to be helpful in getting a grip on how Hegel advanced on Kant's view of natural inquiry.

Sadly, Goethe wrote only very short philosophical essays, so there is much work left to his interpreters in making sense of his reflections on Kant, inquiry, and organic nature. Eckart Förster has done philosophy the service of providing a view which he believes to be Goethe's, and which is at least well-developed enough to be clearly intelligible as a philosophical view, but

there is much that deserves critical scrutiny in his views. I will begin my analysis of Förster by looking at his exhibition of Kant's chief reason for denying us the ability to know internally purposive beings as internally purposive, and then critically examining the Goethean view he offers as an alternative to Kant. Förster will be seen to have overreached in many respects; the view he puts forward on behalf of Goethe cannot do the work he demands of it. Seeing why Förster's attempt to rehabilitate Goethe as a methodologist fails will shed light on a possible alternative way to appreciate Goethe's scientific significance. This alternative view better captures the aspects of Goethe that are taken up in Hegel's philosophy of living nature.

II. Förster as a Leading-String in Making Sense of Goethe for Philosophy

The main aim of Eckart Förster's 2010 book The Twenty-Five Years of Philosophy: A Systematic Reconstruction is a historical one: to trace out the history of a line of thought which Kant first raised in 1781 and Hegel resolved in 1806 – a line of thought which Förster, following Kant and Hegel, in a sense identifies with philosophy *tout court*. In a clear sense, this is a historical inquiry: if philosophy ran from 1781 to 1806, then inquiry into what happened in those years will be the history of philosophy. On the other hand, it is important to Förster that his aim is not *merely* historical: "This book is an attempt to grasp and understand the *single* thought that philosophy begins in 1781 and ends in 1806. The wealth of intellectual phenomena that make this period so rich also tends to obscure the *idea* that lies at the root of that thought. [...] my chief aim has been to grasp the internal dynamics of that fundamental idea, to *reproduce* its immanent development" (Förster 2012 x) – Förster's book is thus a work of rational reconstruction as much as it is straightforward history. One upshot of the brief history of philosophy, as Förster reconstructs it, is supposed to be that the kind of inquiry practiced by Goethe is the way forward

in philosophy.

Goethe, drawing out a notion from Kant, claimed to have achieved the powers of an "intuitive intellect" or "intuitive understanding"[96]. In my previous two chapters I was concerned with a special type of knowledge; I am now chiefly concerned with what type of mind can have this knowledge – the nature of its faculties and its proper method of inquiry. Goethe identified this with what Spinoza called the "third kind of knowledge", *scientia intuitiva*. Förster claims that not only was Goethe correct in both of these claims, but that for philosophy after the twenty-five years of German Idealism "The path of *scientia intuitiva* alone is still open" (Förster 2012 372). As he states in the final sentences of his book, "What I have tried to show in this book is that between 1781 and 1806 a *philosophical* justification [for the knowledge of an intuitive

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[96]The English translation of Förster's book tends to use the latter phrase; standard translations of Kant use the former. The German in both cases is *intuitiven Verstand*, and in English "understanding" and "intellect" are historically synonyms: "intellect" has a Latin root, "understanding" an Old English one, but both have been long used to translate the Latin *intellectus*. I will use the two interchangeably. As I stressed in my first chapter, it is crucial to note that "intellectual intuition" and "intuitive intellect" are importantly distinct for Förster: one is a kind of intuition, the other a kind of understanding; each is a modification of one of Kant's two "stems" of our knowledge, and neither is the simple collapsing of one "stem" into the other. Though the two terms are often collapsed into one another in this way in the literature, for example in (Longuenesse 2000) and (Westphal 2000), Förster is not the first person to notice the non-equivalence of "intuitive intellect" and "intellectual intuition" in Kant. For example, footnote 21 to Guyer's article in the Cambridge Companion to Hegel says that "The term "intuitive intellect" (*intuitive* or *anschauliche Verstand*) is used only in §§76-77 of the *Critique of Judgment* to characterize the conceptual possibility of an understanding whose particular objects would somehow–of course we cannnot say how–be derived from its concepts. The inverted expression "intellectual intuition" is employed several times in the Critique of Pure Reason (see B 72) to connote the related but distinct idea of an understanding that would not need the pure forms of intuition to relate to objects." (Guyer 209)).(NB that Guyer confusedly says that intellectual intuition is a type of *understanding* here, which is itself an error.) Förster's book is the first to make this distinction central to understanding the post-Kantian reception of Kant. He has recently been followed by others, such as (Hahn 2007), (Sedgwick 2012), (Haag 2015).

intellect] was worked out, demonstrating that this is not idle speculation but a real possibility – a possibility whose potential has still to be realized. The future of a philosophy 'that will be able to come forward as a science' has only just begun" (Förster 2012 377). Förster's book thus aims to be immediately both history and "pure" philosophy: the historical line of thought he traces is supposed to lead the reader to see the unique correctness of a certain philosophical approach.

This is a bold and controversial conclusion, to say the least. In taking the measure of it I will first look closely at Förster's defense of his reconstruction of Goethe's natural-scientific methodology. Despite difficulties with his account, Förster's presentation of the *problems* which he shows Goethe to have been responsive to, and the broad outlines of how Förster thinks the problem should be resolved, are both powerfully presented: only Förster's valorization of a *narrowly* Goethean approach to inquiry and an inferentialist view of knowledge by Ideas ends in failure. Förster's book can still be seen as presenting a strong case for the following pair of theses: the German Idealists, among whom we should include Goethe, correctly saw that the Kantian account of our intellectual life needs revision in light of our knowledge of organic phenomena, and they did productive work towards such a revision by critically revising Kant's Idea-talk.

III. "The Methodology of the Intuitive Understanding"

In Chapter 11 of his book, Förster presents and defends an account of the Goethean intuitive intellect and its way of gaining knowledge. If Förster succeeds in showing that we can have a type of knowledge which is ruled out by Kant's account of the powers of the human mind, then this will point to a way to amend Kant's account.

In section 77 of the *Critique of Judgement*, Kant tells us that

> Our understanding, namely, has the property that in its knowledge, e.g., of the cause of a product, it must go from the **analytical universal** (of concepts) to the particular (of the given empirical intuition), in which it determined nothing with regard to the manifoldness of the latter, but must expect this determination of the power of judgement from the subsumption of the empirical intuition (when the object is a product of nature) under the concept. Now, however, we can also conceive of an understanding which, since it is not discursive like ours but is intuitive, goes from the **synthetically universal** (of the intuition of a whole as such) to the particular, i.e., from the whole to the parts, in which, therefore, and in whose representation of the whole, there is no **contingency**[97] in the combination of the parts, in order to make possible a determinate form of the whole, which is needed by our understanding, which must progress from the parts, as universally conceived grounds, to the different possible forms, as consequences, that can be subsumed under it. (KdU 276-7, emphases in original)

Breaking this passage down: Kant tells us that (at least in theoretical knowledge, and setting aside the special cases of mathematics) our human mind thinks by means of universal concepts and intuitively given particulars only by subsumption of the latter under the former: in empirical knowledge we are given particulars which have not yet been brought under a concept, and we bring them under concepts which are produced by our intellectual spontaneity independently of these specific particulars being given in intuition.[98] There is thus, as Kant puts it, a *contingency*

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[97]By Hegel's lights, this modal claim is confused. It is not that there is "no contingency" here, but that the combination is not *accidental*. It is not accidental because it is owed to the act of a fallible power of knowledge of wholes as wholes. What Hegel rejects here is only a *certain type* of contingency attributed to our thinking, one which Kant insisted was omnipresent in it through his claim that all our intellection was discursive. (This will become clearer in what follows.)

[98]It is important not to psychologize Kant's logical claim here: there is no question of empirical particulars being "given" in the sense of some kind of "non-conceptual content" being present in thought prior to empirical particulars being brought under concepts. Temporal language in this context indicates logical priority, not the relative dating of psychological events.

between our concepts and our intuitions: the understanding produces concepts, as "analytical universals", which it does not know will have application to particulars, and sensibility gives us particulars which do not determine which concepts we will use to judge truly or falsely about them. Arguments from elsewhere in the critical philosophy purport to show that some of our concepts, the pure concepts or categories, lack this contingency in relation to objects of intuition: according to the first Critique's "Transcendental Deduction", it is necessary that anything given to us in intuition be capable of being brought under concepts in judgements having categorial form, and it is necessary that the categories have objective validity, application to intuitable particulars. But Kant leaves a type of contingency between our empirical concepts and the empirical intuitions given to us: it is possible for any one empirical concept to lack any application to empirical particulars, and it is not necessary for any one empirical particular to be brought under any one empirical concept.

It is for this reason that Kant holds that any empirical knowledge we have of a whole made up of empirically given parts will exhibit a *contingency* between those parts and the whole. If we had empirical knowledge of a whole "as such", of a whole "as a whole", then we would have to think of the parts of this whole as all falling under a single concept in a special way. It is this special way of placing particulars under a concept which makes it possible for us to think of a mind which can think of a whole "as a whole", and not as a simple collection of contingently related particulars. For example, to think of *a stack of books* as being what I see on my desk, I must think of each of these books as being in the same stack as the others: I must think of the

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Conceptualist readings of Kant are debated, and there is a large literature on the topic. For the reading of Kant on these topics which I endorse, see (McDowell 2009), especially Essay 14.

three books Aristotle's Metaphysics, The Structure and Confirmation of Evolutionary Biology, and Scientific Representation as all falling under the empirical concepts of *stack* and *book* in such a way that they are judged by me to be parts of a single stack of books. Each of these books is given to me in experience in such a way that I am not obligated to think of them by means of those concepts; I could just as well judge that my desk has *something I should reshelve with its companion books*, *something I should find a place for on my new shelves*, and *something I should put with my other library books* on it: this would have me thinking of the same three books, but thinking of none of them under the same empirical concepts, and so not thinking of them as constituting a whole of which they are the parts. The intuition in which these books are given to me leaves open both of these ways of bringing them under empirical concepts. If I think of the books as constituting a whole (one stack of books), then I do this by bringing empirical particulars already given to me in intuition under empirical concepts which the particulars did not obligate me to bring them under. In a clear sense, thinking of a whole in this way is proceeding from knowledge of the parts to knowledge of the whole: the parts are given in intuition (though not yet *as* parts of anything), and the whole comes into view only because a special sort of conceptual operation is performed on what is given (I form these particular empirical judgements about the books). If I attempted to think the whole before thinking its parts, then I would have to try to have the stack of books in view before any of the three books was given to me in intuition, and this is impossible for a merely discursive understanding: thinking of the whole stack of books as being given prior to its parts, which are the three books in that stack, requires thinking of those parts as being given to me on the condition that I think of them as parts of that stack of books: but we have already seen that these empirical particulars are given to me without

mandating that I think about them in any special way, without my having to bring them under any particular empirical concept. So it is not possible for me to think of the stack of books (as a whole) being an object of my knowledge prior to the books (as its parts) being objects of my knowledge. Kant holds that this sort of part-whole relation is how we find our understanding works in general.

However, as I showed in my second chapter, Kant had claimed that anything which is supposed to be thought of as internally purposive, such as a dog which moves itself towards its bowl of food, must be regarded by us as an organized whole. The particular parts of the whole, such as the dog being at one place and then at another as it moves closer to its food, must be regarded by us as related non-contingently, and yet not being rendered necessary in the way that they would be if they instantiated a strict physical law.[99] The way in which this non-contingency is supposed to be introduced into our thinking is for the motion from one place to another to be regarded as *for the sake of* moving closer to the food, which goal constitutes the end of the dog's action. To think of anything as internally purposive is thus to think of it as a whole whose parts are made possible by that whole: "only then and on that account can such a product, as an **organized** and **self-organizing** being, be called a **natural end**" (KdU 245, emphases in original). Suppose these particular parts were given to us without our bringing them under a concept of a single natural end as the whole of which they are parts. If we were then to bring them under purposive concepts, if we were to introduce orderings of means and ends to the particulars given to us, then this would only constitute an *external* purposiveness in those particulars: we would

[99]This contrast will be especially important when I turn to Hegel's philosophy of nature directly in my final chapter.

not represent these parts to ourselves as possible only because of the whole order which we bring them under, and so would also not represent them as internally purposive. So, if an object with an internal purposiveness is capable of being an object of knowledge for us, it must be given to us as a whole whose parts are possible only because they are parts of that whole, whose concept must also in some way be given to us. This is what Kant calls, in §77 of the Critique of Judgement, going from the "**synthetically universal** (the intuition of a whole as such) to the particular, i.e. from the whole to the parts" (KdU 276). Only a mind which could think by means of such "synthetic universals" could know an object as internally purposive.[100] As Kant holds that we can think only by means of "analytic universals", he holds that we cannot know whether any objects are internally purposive, and that any empirical concept of a natural end must remain merely problematic for us, serving at best as an unavoidable heuristic, and never allowing us to know living nature as living nature.

IV. Goethe Contra Kant

This is the Kantian problematic to which Förster takes Goethe to give us the proper response. Goethe, in a short retrospective essay from 1817 titled "Intuitive Power of Judgement", quotes Kant's passage about "synthetic universals" from §77 of the Critique of Judgement and remarks on it as follows:

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[100]In a loose sense of "know", a Kantian may want to say that Kant allows that we can "know" some natural objects as internally purposive because we can make such objects intelligible to ourselves by applying principles of reflective judgement. But this "loose" sense of "know" is not one I see any reason to make use of; I use the word only in the ordinary sense of nonaccidentally true belief. Making an object intelligible to ourselves through applying principles of reflective judgement can fall short of forming true beliefs about it, and so even when these beliefs are true this is accidental, and the beliefs so formed cannot be knowledge. (See (Rödl 2007), ch. 5, on knowledge as nonaccidentally true belief.)

> Here, to be sure, the author seems to point to divine understanding. In the moral area, however, we are expected to ascend to a higher realm and approach the primal being through faith in God, virtue, and immortality. Why should it not also hold true in the intellectual area that through an intuition of eternally creative nature we may become worthy of participating spiritually in its creative processes? Impelled from the start by an inner need, I had striven unconsciously and incessantly toward the primal image and prototype, and had even succeeded in building up a method of representing it which conformed to nature. Thus there was nothing further to prevent me from boldly embarking on this "adventure of reason" (as the Sage of Koenigsberg himself called it). (GSS 31-2, translation modified[101])

Here Goethe acknowledges that Kant has "divine understanding" in mind when he speaks of our being able to conceive of an intuitive intellect, and that Kant's point in doing so is to highlight a distance between the powers of our human minds and those of this "divine understanding". However, Goethe suspects that this distance is significant in part because it can be shortened. He notes that in his doctrine of practical postulates Kant brings us to a kind of knowledge of God and immortality which he explicitly denies to us in his theoretical philosophy. Goethe then wonders if Kant might not also have left open the possibility that, though in general the powers of our human minds fall short of those had by a "divine understanding", we might attain some of those powers through a special development of our intellectual life, just as the practical development of our moral life makes us able to know the existence of God and immortality as

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[101]The title of Goethe's essay is *Anschauende Urteilskraft*; it has been translated into English by Douglas Miller as "Judgement through Intuitive Perception". To bring Goethe in line with standard Kant-translations, I have converted "intuitive perception" and related terms to the simple "intution" familiar from Kant-translations. I have similarly changed "divine reason" (*göttlichen Verstand*) to "divine understanding".

conditions of the highest good.[102] In particular, Goethe believes that he has attained just this sort of quasi-divine power through his work in the natural sciences: he has developed his approach to inquiry according to a method which "conformed to nature" and which has made it possible for him to know natural products in a way which Kant held to be impossible for mere humans. Goethe believes that he has attained knowledge of internally purposive natural ends as organized wholes, and that the knowledge of these organized wholes makes possible his knowledge of the parts of these wholes as necessary members of those wholes. Goethe claims for himself an "intuition of a whole as such", a knowledge through synthetic universals; Goethe's usual term for these synthetic universals is *Ideas*. Förster follows Goethe in equating "Idea" and "synthetic universal", and it is Goethe's use of "Idea" which Förster sees as crucial for later German Idealists.[103]

Chapter 11 of Förster's book, "The Methodology of the Intuitive Understanding", is devoted to an explication and defense of Goethe's methodology for acquiring and exhibiting knowledge by means of Ideas. If Förster succeeds in making good on these Goethean claims, he will have shown that humans are capable of a kind of knowledge which Kant had principled reasons for denying to us, and so shown that Kant's principles are in need of revision so as to allow for this knowledge.

V. Goethean Problems

Förster introduces his Goethean method by way of a historical narrative with a moral at

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[102]See KPV 5:133-146.

[103]As we will see later, Goethe took his valorization of Idea-talk to be a playful rebuke to the Kantian criticisms Schiller made of his work.

the end. In 1792, Goethe wrote a short essay titled "The Experiment as Mediator between Object and Subject". Goethe begins this essay by noting that a man's ordinary way of viewing objects is "to relate them to himself, and rightly so since his fate hinges on whether these objects please or displease him, attract or repel him, help or harm him" (GSS 11). In contrast to this,

> A far more difficult task arises when a person's thirst for knowledge kindles in him a desire to view nature's objects in their own right and in relation to one another. On the one hand he loses the yardstick which came to his aid when he looked at things from the human standpoint; i.e., in relation to himself. This yardstick of pleasure and displeasure, attraction and repulsion, help and harm, he must now renounce absolutely; as a neutral, seemingly godlike being he must seek out and examine what is, not what pleases.[...] he must find the measure for what he learns, the data for judgement, not in himself but in the sphere of what he observes. (GSS 11)[104]

The way of procuring this external yardstick from the sphere of what we observe is the topic of Goethe's essay; as the title hints, his answer will be that experimentation provides the key. Goethe tells us what he means by "experiment" in the following passage:

> When we intentionally reproduce empirical evidence found by earlier researchers, contemporaries, or ourselves, when we re-create natural or artificial phenomena, we speak of this as an experiment. The main value of an experiment lies in the fact that, simple or compound, it can be reproduced at any time given the requisite preparations,

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[104]Though Spinoza is not cited in this essay, Goethe is clearly here following Spinoza's distinction, in the appendix to book I of the Ethics, between the ordinary way in which people "look on all things of Nature as means to their own advantage" (Spinoza 58), which Spinoza claims is a result of their being led by their imaginations, and the way in which Spinoza himself is viewing things in his book, which Spinoza credits to the intellect as opposed to the imagination. Just as Goethe does, Spinoza distinguishes between viewing things in relation to our preferences (so that we call foul-smelling things "bad" because they disagree with us), and measuring "the perfection of things [...] solely from their own nature and power" (Spinoza 62), which Spinoza connects with the way in which they are conceived as following from one another in the divine intellect.

apparatus, and skill. (GSS 13)

We should distinguish multiple worries Goethe is concerned with in his essay. Goethe's initial thought here seems to be that experimentation provides the necessary distancing from our natural perspective by focusing us on replicability: if we are viewing objects solely in terms of whether they are pleasant or painful for us, we will not achieve this replicability, for what is pleasant or painful to one person at one time may be otherwise for another person or at another time. To produce replicable phenomena, then, we have to view objects without immediately relating to them in terms of their pleasantness or painfulness to us: the phenomena we produce will thus be more "objective" than those of ordinary life, "objective" in the sense of being freed of much personal prejudice. However, Goethe is clever enough to see that this does not mean that phenomena producible in replicable experiments are "objective" in the sense of showing up independently of anything the experimenter wills: it is still up to us which experiments we perform, and so to that extent we control what phenomena experimentation can bring forth. To this extent, the experimenter is still viewing what it pleases him to view, instead of taking up a "godlike" stance and simply viewing "what is". Goethe is seeking a form of inquiry that will free us from this kind of subjectivity, too.

At a more practical level, Goethe is worried about the possibility that experiments may be performed to produce results which support an experimenter's favored theory, while other experiments which would produce disconfirmatory evidence get ignored. Goethe wants to find a way to conduct experimentation which will eliminate this sort of prejudice, but worries that this seems impossible. He states his worry as

a paradox of sorts [....] I would venture to say that we cannot prove anything by one

> experiment or even several experiments together, that nothing is more dangerous than the desire to prove some thesis directly through experiments, that the greatest errors have arisen just where the dangers and shortcomings in this method have been overlooked. (GSS 14)

Goethe's ground for this "paradox" is that

> we can never be too careful in our efforts to avoid drawing hasty conclusions from experiments or using them directly as proof to bear out some theory. For here at this pass, this transition from empirical evidence to judgement, knowledge to application, all the inner enemies of man lie in wait: imagination, which sweeps him away on its wings before he knows his feet have left the ground; impatience; haste; self-satisfaction; rigidity; formalistic thought; prejudice; ease; frivolity; fickleness – this whole throng and its retinue. Here they lie in ambush and surprise not only the active observer but also the contemplative one who appears safe from all passion. (GSS 14)

Goethe realizes that he may sound like a mere skeptic raising useless doubts against the very possibility that we, frail beings that we are, might construct theories of nature's inner workings. But this is not his intent: he means his paradox to raise a problem for investigators of nature which should be solved by investigators of nature, not taken as grounds for giving up their task.[105] He presents his "paradox" more carefully immediately after stating it:

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[105]Goethe does not consider a possible social remedy to this problem, which has a Hegelian ring to it, but which received explicit thematization in the philosophy of science more recently (as in Longino 1990): if scientific inquiry is carried out in a social context where different scientists have different favored theories, then this subjective element on the part of individual scientists might be cancelled out by an objective social formation in which each scientists's favored theory is something another scientist wants to tear apart. "Favored theories" would then be supported only against active criticism, which might check the subjective fondness a particular researcher might have for a particular theory. The subjective interests of the scientists, in the plural, would then provide us with the needed defense against the danger posed to the objectivity of science by any singular subjective interest. On objectivity in the sciences, see (Lloyd and Schweizer 2013).

> Every piece of empirical evidence we find, every experiment in which this evidence is repeated, really represents just one part of what we know. Through frequent repetition we attain certainty about this isolated piece of knowledge. We may be aware of two pieces of empirical evidence in the same area; although closely related, they may seem even more so, for we will tend to view them as more connected than they really are. This is an inherent part of man's nature; the history of human understanding offers thousands of examples of this, and I myself make this error almost daily. (GSS 14)

So Goethe's "paradox" comes to this: given that we are going to unite different parts of experience and draw connections between them, how we can be sure that in doing so we are not simply building castles in the air, being misled by an overactive imagination? If we could avoid generalizing from our experiences, we could avoid this risk, but Goethe believes this is neither possible for us nor necessary: *somehow*, he is confident, we have made progress in understanding nature, and he intends to figure out how we have done so.

> Every piece of empirical evidence, every experiment, must be viewed as isolated [is the stance it seems we are forced into by the "paradox"], yet the human faculty of thought forcibly strives to unite all external objects known to it. It is easy to see the risk we run when we try to connect a single bit of experience with an Idea already formed, or use individual experiments to prove some relationship not fully perceptible to the senses but expressed through the creative power of the mind. [On the other hand] Such efforts generally give rise to theories and systems which are a tribute to their author's intelligence. But with undue applause or protracted support they soon begin to hinder and harm the very progress of the human mind they had earlier assisted. (GSS 14-15)

The construction of theories on the basis of experiments thus seems to have an ambiguous value: they can either hinder or assist the "progress of the human mind". As Goethe continues, "It is not enough to note this danger and warn against it. We need to declare our own views by showing

how we ourselves would hope to avoid this pitfall, or by telling what we know of how some predecessor avoided it" (GSS 15).

Before we turn to how Goethe hopes to "avoid this pitfall", it is useful at this point to distinguish several of the problems to which Goethe is attending in his *Experiment* essay. As we saw above, Goethe begins his essay by noting that our "thirst for knowledge" can produce in us "a desire to view nature's objects in their own right and in relation to one another"; Goethe clarifies what this desire comes to by contrasting it with the use of a "yardstick of pleasure and displeasure, attraction and repulsion, help and harm" in viewing nature's objects (GSS 11). This tension between our "thirst for knowledge" and our ordinary human way of being is keenly felt by Goethe, as it was by Spinoza, and in a sense the problem which structures his entire essay is that we have a desire to become "a neutral, seemingly godlike being [who] must seek out and examine what is, not what pleases" (GSS 11).

The first way this desire shows itself is in the legitimate worry that in conducting an experiment, I might comport myself in such a way that others cannot imitate me so as to replicate my experiment. In such a case, some elements of what I take to be disclosed by my experimentation really only bring out features of my individual peculiarities as an inquirer, as though I had taken a photograph with my thumb on the lens. In this case, the desire to become a "neutral, seemingly godlike being" is a helpful counterbalance to what is peculiar to me as opposed to other inquirers; the desire to overcome my own individuality allows me to view my work as though through the eyes of a stranger. Carefulness in laying out the methodology of an experiment can help allay my worry about reproducibility; designing and documenting an experiment in such a way that "it can be reproduced at any time given the requisite preparations,

apparatus, and skill" (GSS 13) is challenging but by no means impossible.

A more pernicious way this desire for neutrality shows itself is in the very real danger of a scientist clinging to a pet theory, and seeking only to confirm it. This is the danger Goethe refers to when he says that "nothing is more dangerous than the desire to prove some thesis directly through experiments" (GSS 14): the danger is that this sort of "proof" can be found regardless of whether the thesis is supported by the full weight of the evidence. The history of science is full of such pet theories, often held by otherwise respectable scientists. Here the desire to be a "neutral, seemingly godlike being" fools one into thinking one actually is such a being, and so not prone to human frailty. This leads one to conflate the evidence one presently has ready to hand with the full weight of the evidence which might be brought out by continued inquiry. If a scientist knew she was acting as a partisan of her pet theory, and was able to truthfully acknowledge whether or not she had found compelling evidence for her claims, then this would remove the danger of trying to "prove some thesis directly through experiments": if one *wants to do* this, there is nothing wrong with that, so long as there is no confusion about whether or not this *has been done*. The desire to prove something that one hopes is true can motivate perfectly respectable work, but there is a real psychological danger of conflating one's subjective preference that a theory be true with an objective ground for placing credence in the theory.

A third way the desire for neutrality shows itself, and one which is more deeply problematic, comes out in what Goethe explicitly identifies with his "paradox": given that we are going to unite different parts of experience and draw connections between them, how can we be sure that in doing so we are not simply building castles in the air, being misled by an overactive imagination? Nature is a whole, and so to grasp her we must not only grasp isolated moments of

our experience, but must combine these with one another. But what experiences I have, what experiments I conduct, is in large degree up to me – I conduct experiments as it pleases me to. How then can I hope, by means of experience and experiment, to "examine what is, not what pleases"? There is a kind of desire to get out of his own skin at work in Goethe's essay. He is worried that in our piecemeal sciences, we might only ever grasp what is all too human, so that a different sort of science would be needed to grasp nature as a whole.[106] This is clearly also a motivation for Förster; nothing else could explain his insouciance in dismissing Newtonian criticisms of Goethe's theory of colors as irrelevant because of Newtonian methodology (see FN 22, following). The particular way this desire to get out of his skin shows up in Goethe's *Experiment* essay is in the drive to escape the fact that in natural inquiry we connect experiences in ways that satisfy us, and not in ways that are independent of what satisfies us. Goethe wants to find the ways in which nature "really is" connected, and not the ways in which we happen to connect it; any way we happen to connect it will be unsatisfying to him, just because *we* have done it.

Though Kant (like Spinoza) is nowhere cited in Goethe's essay, the problem Goethe raises in his "Experiment" essay is one which can be put in Kantian language: How is progressive scientific inquiry possible? How can we humans ever uncover nature's secrets?

VI. Goethe's First Solution to his "Paradox"

The solution to his "paradox" which Goethe presents in his "Experiment" essay is introduced as follows: "Nothing happens in living nature that does not bear some relation to the

[106]He was presumably inspired in this by Spinoza's letter on the infinite (XII/XXIX) (Spinoza 267-271), though a discussion of Spinoza's criticism of mathematical science, which for Spinoza is always finite science, is outside the scope of this dissertation.

whole. The empirical evidence may seem quite isolated, we may view our experiments as mere isolated facts; but this is not to say that they are, in fact, isolated. The question is: how can we find the connection between these phenomena, these events?" (GSS 15) The unity which Goethe poetically refers to as "living nature" is just the sort of unity which Kant regards as asymptotic for our reflections on nature: all happenings in nature, and so all experimental phenomena, must be capable of coherent unification, all phenomena ordered (for Kant) by a single series of hierarchically organized laws. Goethe believes that "living nature" hides within herself a system of lawlike connections between her various phenomena that might be revealed by inquiry. Goethe's "paradox" seemed to show that finding these connections is impossible, but now Goethe makes a clarification: "Earlier I stated my belief that the direct use of an experiment to prove some hypothesis is detrimental; this implies that I consider its indirect use beneficial" (GSS 15). What is this "indirect use" of experiment? Goethe explains that

> All things in nature, especially the commoner forces and elements, work incessantly upon one another; we can say that each phenomenon is connected with countless others just as we can say that a point of light floating in space sends its rays in all directions. Thus when we have done an experiment of this type, found this or that piece of empirical evidence, we can never be careful enough in studying what lies next to it or derives directly from it. This investigation should concern us more than the discovery of what is related to it. To follow every single experiment through its variations is the real task of the scientific researcher. [...] In the first two parts of my *Contributions to Optics* [1791/2], I sought to set up a series of contiguous experiments derived from one another in this way. Studied thoroughly and understood as a whole, these experiments could even be thought of as representing a single experiment, a single piece of empirical evidence explored in its most manifold variations. Such a piece of empirical evidence, composed of many others, is clearly of a higher sort. It shows the general formula, so to speak, that

> overarches an array of individual arithmetic sums. In my view, it is the task of the scientific researcher to work toward empirical evidence of this higher sort – and the example of the best men in the field supports this view. (GSS 15-16).

Here we have the first presentation of what for Förster will ultimately end up as "the methodology of the intuitive understanding". The problem Goethe faced was whether we might not always unify phenomena in ways which do not reflect their inner nature, given the contingent relation of concepts and intuitions for a merely discursive intellect; his solution is to not unify phenomena until one has carried out "every single experiment" regarding them. He thinks that doing so, as he himself did in his early optical studies, leads to having an "experience of a higher sort", which Förster identifies with Spinoza's *scientia intuitiva*. In his book Förster originally introduced this Spinozistic term of art, following one of Spinoza's definitions[107] of it, as that which "results when I recognize a thing's properties through knowledge of its essence" (Förster 2012 93). Förster's thought here is that Goethe takes himself, in his careful optical investigations, to have grasped the underlying essence of optical phenomena in general, and to have (in his *Contributions to Optics*) derived from his knowledge of this essence the particular properties of light and color. This transition from the careful investigation of "a series of contiguous experiments derived from one another" to the grasping of an underlying essence is where Förster sees Goethe believing himself to have made the transition, hinted at in his "Intuitive Power of Judgement" essay, between thinking by means of a merely human discursive understanding, bringing concepts to particulars and hoping to unify them into a coherent whole, to thinking by

[107]On difficulties with making sense of Spinoza's multiple definitions of *scientia intuitiva*, and his not obviously compatible examples of it, see (Wilson 1995), (Melamed 2013). Förster does little work to make sense of this region of Spinoza; he instead uses his development of Goethean ideas to try to illuminate Spinoza's darkness.

means of a seemingly divine intuitive intellect, perceiving the whole of optical phenomena and locating the particular facts in reference to this whole. As Förster puts it:

> In the case of natural objects we do not at first know their 'essence' (idea), but must seek to discover it. Rather than deducing all properties from the idea, the idea can only be known by way of the totality of the properties; in the case of natural things, the idea underlying the properties, *provided there is one*, can be recognized only at the end of the investigation. (And accordingly it is not until the end of the investigation that we can know *whether there is such an idea*.)[108] This means that, first of all, all the properties of the relevant phenomenon must (discursively) be sought out and gathered together, in order then (intuitively) to bring the whole *as whole* into view so that the idea can emerge. (Förster 2012 253, emphases in original).

If Goethe's resolution to his "paradox" works, then he has shown us how to achieve a kind of knowledge which Kant had held was possible only for a kind of understanding which is not discursive, and not human: thinking by means of a kind of concept which is, so to speak, given to us in experience *along with* the particulars which fall under it, so that our spontaneous judging of those objects as falling under that concept is only a uniting of what nature already brings forth as united. If Goethe has succeeded in showing how to achieve this "higher" kind of experience, then substantial elements of the intuition-concept duality in Kant will need reworking.

However, Förster thinks that Goethe's initial presentation of this "higher" kind of

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[108]This part of his view creates a puzzle for Förster's positive program for philosophy, to think by means of Ideas: if an Idea can come into view, or even be known as possibly capable of coming into view, only *after* the investigation of everything that Idea might illuminate, then how can Ideas, or an approach to inquiry guided by them, make any difference in practical, ongoing, live inquiries? It will be shown later that Hegel has ways of avoiding this puzzle, as he views Ideas as a logically distinct type of concept. Ideas for Hegel enable us to think particular kinds of thoughts, such as thoughts of living beings *qua* living; they are not just a way for us to acquire knowledge of things thinkable (but not knowable) discursively, as they are for Förster.

experience doesn't achieve Goethe's goals. Even worse, Förster tells us that "Goethe's own path, the one that in the end actually led him to the solution of his problem, left hardly any traces in his writings" (Förster 2012 257). Neither does Goethe, in his later writings, devote the clear attention to methodology that is the topic of his "Experiment" essay. Förster takes upon himself, then, the four tasks of showing why Goethe's initial presentation failed, showing how hints in Goethe lead to a better view of inquiry, presenting this view explicitly in a way that Goethe never did, and defending this view as a real possibility for us: that *scientia intuitiva* is a real goal we can set for ourselves, and reach by means of the attainment of intuitive intellection.

The first step in Förster's project, showing the failure of Goethe in his "Experiment" essay, can be achieved by looking at the exemplary investigator of nature Goethe pointed to in that essay, namely himself in his *Contributions to Optics*. Goethe claims to have achieved an "experience of a higher sort" through the experiments described in that work, and on that basis to have acquired a higher kind of knowledge of the phenomena of light and color. However, the two parts of the *Contributions to Optics* were supposed to be followed by a third part. The unhappy history of this unpublished part is described by Förster as follows:

> In August 1793 Goethe had sent the third, as yet unpublished part of the *Contributions to Optics* to Georg Christoph Lichtenberg and asked for his opinion. This installment included Goethe's explanation of colored shadows[...]. In the third installment Goethe gives a "realistically objective" explanation that harmonized with his core experience of color: Since colors are produced at the boundary between light and dark [as described in the first two parts of *Contributions to Optics*], the fact that the shadows are colored is the result of the relation between "stronger and weaker light." That is, if there is only one source of light, the shadow it casts on a white surface will be black; if however the shadow is also illuminated by another light source of different intensity, then the shadow

> appears to be blue when the second source is weaker than the first, and yellow when it is stronger. In a long letter dated October 7, 1793, Lichtenberg voices skepticism about Goethe's explanation. At the end of his letter he also points out a phenomenon which is similar to that of colored shadows and which we refer to today as successive contrast or colored afterimages. Lichtenberg writes, "It is, for example, certain that if one looks for long enough through a red glass and then suddenly removes it from before one's eyes, objects will briefly take on a green cast; if, on the contrary, one looks through a green glass, they will at first have a red cast. This is connected to Buffon's *couleurs accidentelles*, which we notice in our eyes." (Förster 2012 172, citations omitted)

At this point in his inquiries, Goethe thought that he had grasped the Idea which underlay all phenomena of color, and made use of this idea to explain colored shadows in terms of color-contrasts in objective interactions of light and darkness. Lichtenberg's objection is simply to point out another phenomenon involving color-contrast of just the sort Goethe had been trying to explain, but which cannot involve objective interactions of light and darkness: the merely illusory appearance of colored after-images.

> Goethe's response to this is extraordinarily interesting. He whole-heartedly concedes the affinity between colored shadows and the "so-called *coulers accidentelles*," but objects to calling them *accidental* colors since they can be methodologically produced in repeated experiments just as colored shadows can be. More importantly, though, Goethe admits that he can offer no explanation for the similarity between the two groups of phenomena. "Your excellency have not failed to notice how nearly these experiments are related to the so-called *couleurs accidentelles*. In their case, too, it is possible to conduct a beautiful series of experiments matching the others in every respect; here there is nothing accidental, but there is an agreement of different experiences, the diversity of which we recognize through the senses, but whose agreement we cannot grasp with the intellect, much less express in words. As too often, alas, our mind finds itself in the predicament of having either to let the phenomena stand in isolated juxtaposition or to invent a

> hypothetical unity that tangles them more than it ties them together. How much is still left for us, how much is left for our descendants to do." Successive contrasts cannot be understood on the basis of Goethe's 'realistically objective' explanation of colored shadows, i.e. on the basis of 'stronger and weaker light'.[...] In other words, the two phenomena, despite their seeming affinity, cannot be integrated in a complete series of properties such that their common efficient cause or their underlying essence[109] could be determined with any certainty. It is unclear how both phenomena could be explained on a unified basis.[...] Further publication of the *Contributions* was out of the question. He had still not achieved clarity on the right method for *scientia intuitiva*. (Förster 2012 172-173, citations omitted)

The historical moral Förster takes away from this episode is that Goethe in his *Contributions to Optics* had claimed to have achieved *scientia intuitiva*, and to have arrived at a method for achieving it, but had in fact done neither. We know from this example that we can be under the illusion of having done these things, and avoiding the danger of this illusion will be one of the aims of Förster's explication of Goethe's method. Förster connects this failure on Goethe's part to an arithmetic analogy Goethe had given in his "Experiment" essay. Looking at Förster's criticism of this analogy will be illuminating for showing problems in Förster's own account of the method for achieving *scientia intuitiva*.

Goethe compared the "experience of a higher kind" which the investigator into nature was supposed to seek out to "the formula in which countless individual problems of arithmetic are expressed" (GSS 16). Förster reads this metaphor as saying that the "experience of a higher kind" is supposed "to provide a means for deriving the individual phenomena from it" (Förster

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[109]This odd pairing of "efficient cause" and "essence" is in imitation of Spinoza; nothing hangs on it.

2012 256), just as being given an arithmetic formula such as y=2x+1 lets you derive a series of ordered pairs which satisfy it: (0,1), (1,3), (2,5), etc. This order of derivation is unproblematic.

> However, our task is still to *discover* the formula corresponding to the idea! Instead of generating the series on the basis of the formula, we have to derive the formula on the basis of the series. Thus to begin with all I have is (say) the series 1, 1, 2, 3, 5, 8, 13, 21... What is the formula on which the series is based? What would be the next formula after 21? And here we see: Just as little as the arithmetic series as such provides the formula that generates it, neither does the 'systematic variation of every single experiment' in a complete series reveal the underlying idea. [...] the mere fact of having discovered all the parts (properties)[110] is not in itself equivalent to having derived them from a single origin (idea). (Förster 2012 256-7).

Förster's complaints here are justified. If he is interpreting Goethe's metaphor correctly, then the methodology endorsed in Goethe's "Experiment" essay is hopeless. Just as no series of points determines a line, no series of values determines a formula. There is never a uniquely determined formula which fits any sequence of values: if one is given only the ordered pairs (0,1), (1,3), and (2,5), there is nothing to decide whether y=2x+1 or y=|2x+1| or y=|2x|+1 is the formula meant, nor would this be settled by being given an infinite series of additional ordered pairs, so long as none of them included a negative element. The problem can be generalized even further: Nothing in the given series tells us whether the arithmetical formula we are supposed to look for is a function or not, or if so if it is a continuous function, or if it might be a piecewise function, etc. Goethe's metaphor faces a serious underdetermination problem.[111]

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[110]This curious identification of "parts" and "properties" is in imitation of Spinoza; nothing hangs on it.

[111]The issues in play here are essentially the same found in what the ancients called "analysis", and why in a real sense there can be no "method of analysis" similar to the "method

These issues with his metaphor reflect issues with the "experience of a higher kind" itself. If the only constraint on what the "experience of a higher kind" is supposed to be is that it must allow the retroactive derivation of the results of the series of experiments which originally led to it, then many distinct "experiences of a higher kind" could fit the bill for any given series of experiments, and so none of them will be uniquely derivable from the series of experiments itself. If the "experience of a higher kind" which the investigator into nature is supposed to seek out is supposed to be acquired by contemplating a series of experiments "as a whole", there is a deep problem with the very idea: no unique sort of "whole" is determined by a series of experiments. This also explains the failure of Goethe's third *Contribution to Optics*: Goethe believed that he had carried out all possible experiments regarding the phenomena of colored shadows, and having done so, believed that he could see, from the perspective of one who sees the phenomena of colored-shadows-as-a-whole, that he had not left anything out. But Lichtenberg's criticism convinced Goethe that the perspective he had taken himself to occupy was illusory. Even though there is an identifiable harmony among the experiments in Goethe's *Contribution to Optics*, which makes tolerably clear how he could have believed himself to have described "a series of experiments which border on and immediately touch upon each other" (GSS 16), this sort of harmonious completionism among his color-experiments does not determine that series as forming a whole of the kind Goethe wanted them to form: they hang together more loosely than he perceived them to. Goethe maintained his hope that he could grasp the Idea behind color-phenomena in general, but the failure of his *Contributions to Optics* showed both that he had not found a methodology which could lead to this and that it was

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of synthesis", though Newton sought earnestly for one. Cf. (Menn 2002), (Guicciardini 2009).

possible for him to erroneously think that he had grasped an Idea when in fact he had not. So far as the methodology of Goethe's "Experiment" essay goes, he is not yet able to establish that there are any Ideas to be grasped; following the mathematical analogy, being given a numerical series by someone fails to establish that these numbers were produced as the values of a function which might be so much as guessed at. Goethe's methodological problem here is deeper than merely not having found a methodology for the grasping of the Ideas behind diverse phenomena: he has so far not established that there are Ideas to be grasped, that his attempts could in principle come to a happy conclusion.

VII. Förster's Preamble to Goethe

At this point in his presentation of "The Methodology of the Intuitive Understanding", Förster admits that his methodological claims will float more freely from Goethe's texts: "Goethe's own path, the one that in the end eventually led him to the solution of his problem, left hardly any traces in his writings" (Förster 2012 257). Despite this, Förster believes he has figured out Goethe's trick, and he introduces it by further discussion of his mathematical example:

> What must I do in order to find the appropriate formula for the series 1, 1, 2, 3, 5, 8, 13, 21? Apparently I have to investigate the transitions between the numbers in order to see how one arises from the other and whether the intervals between them are based on some regularity. However I end up achieving this, there is no doubt that the path from the series to the formula lies in studying the *transitions*. [Here Förster adds a footnote: "An intellectual re-production of the transitions between 1, 1, 2, 3, 5, 8, 13, 21, is necessary in order to realize that, from the third element in the series onwards, every number is the sum of the preceding two numbers; hence the next number must be 34, and we are dealing with the formula for the Fibonacci series, $f_n=f_{n-1}+f_{n-2}$, $n\geq 2$."] (Förster 2012 257).

This treatment of the series Förster himself introduced is problematic. Nothing he has told us

about this series determines that there is an interesting pattern to be found among them at all; as Förster himself says, part of what he is here doing is investigating "*whether* the intervals between [the numbers] are based on some regularity". Given only the number series, it is possible that they were produced by pulling numbered slips of paper out of a hat, or by rolling dice, or in some other random manner. Förster omits the ellipses the second and third times he presents the series; without the ellipses it is not clear why he believes there is another number in the series at all: he merely assumes that his series must have more than the given eight numbers in it.[112] His comments in his footnote are even more problematic: if one is supposed to *realize that* the numbers are the first eight members of the Fibonacci sequence *by* producing them in order, then one must produce them by some means other than applying a formula which gives the Fibonacci numbers. It is not at all clear how one is to carry out this sort of "intellectual re-production of the transitions" without already knowing to apply the formula which is supposed to be the result of this activity. The Fibonacci sequence is in fact a particularly bad example for Förster to use, since the first two numbers in the series don't follow the same pattern as the rest: neither of them is the sum of the two numbers which preceded it; they are simply how the sequence is begun. Förster's muddled treatment of this mathematical material suggests that something may be awry in his reconstructed Goethean method.

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[112]Förster may have been mislead in this case by the existence of "What Comes Next?" questions in math puzzle books and on standardized exams. But these artificial environments provide an assurance that a puzzle or test-question always has a uniquely "correct" solution (i.e. one that matches what is in the back of the book or on the answer key). Our shared interests in mathematical practice ensure that "102" is never the correct answer to "What comes next in this sequence: 98, 99, 100..." (except in contexts where jokes about Kripkenstein are a real possibility). But the artificial scaffoldings which make this sort of mathematical practice possible are not provided for us when we investigate nature.

But the mathematical material is only treated as a metaphor by Förster; it was perhaps meant only as a useful analogy for introducing Goethe's method, not taken to be an example of it in a strict sense. It would not be terribly shocking if a methodology designed for leading the investigator into nature to grasp natural products as they are in their own essence leads to stumbling when one tries to apply it to mathematics, where (plausibly in a Kantian context, at least) the essence of mathematical phenomena are nothing beyond what they are constructed as: in mathematics there is no contrast between appearance and essence such as Goethe's method is meant to overcome. In any case, Förster provides two examples which are explicitly meant to illustrate Goethe's method, which he characterizes as follows:

> The suggestion is that if one wants to find the underlying idea, then what is separate in experience (the parts or properties) must be considered with a view to their *connection*, i.e., to the *transitions* between the parts. In the initial formulation the thought is entirely abstract, so I would like to illustrate it (and examine it) a little further by taking a few examples from everyday experience. (Förster 2012 258).

Förster's first example is the viewing of an experimental film: the film seems to consist of disjointed scenes with neither rhyme nor reason, until the final scene of the film: "suddenly everything that came before is illuminated in a flash. This final scene provides the key to understanding the film and allows us to recognize the idea that the director wanted to present" (Förster 2012 259). On repeated viewings of the film, the scenes which previously appeared random and pointless now flow smoothly into one another in a coherent way.

> In this example we are at first, i.e. after seeing the film for the first time, given all the parts (scenes) of a whole as well as the underlying idea, but we are not yet given the internal link, the 'transitions' between the scenes. This suggests that *if* a whole consists of these three elements and two of them are given, then I can infer the third element from

> them. We could put this to the test if for example, differently than in the case of the film, we imagine a case in which the idea and the transitions are given, but the parts still have to be found. (Förster 2012 259, emphasis in original).

Förster's second example is meant to be just such a test-case: A psychiatrist becomes interested in the idea of Nietzsche having undergone psychoanalysis, and decides to write a novel about it. It would be out of character for Nietzsche to see an analyst voluntarily, and so the author stumbles upon the idea of Nietzsche believing that he himself is needed as the therapist giving aid to someone else, who is really a psychoanalyst analyzing Nietzsche. Lou Salome's acquaintance with Josef Breuer supplies the needed personae: Salome convinces Nietzsche that Breuer needs help which only Nietzsche can provide, and Breuer performs psychoanalysis on Nietzsche while himself lying on the couch.

> With this a narrative framework is in place which connects the beginning, middle, and end of the story and becomes a central thread, making transitions possible between the individual scenes. The only thing still missing are the scenes themselves – the different parts of the narrative in which the idea is to be realized. But now they can be 'found' in light of what is already given: they have to be realistic scenes in the sense that they are not only to reflect the locality and the Viennese milieu in the period when psychoanalysis was originally developed, but also to draw on Nietzsche's biography in such a way that a fictional narrative about *Nietzsche* comes about and not about someone who would bear no resemblance to the philosopher. (Förster 2012 260, emphasis in original)

This second example is clearly inadequate as it stands: the particular scenes in the novel which wants writing are wildly underdetermined by the constraints Förster says will allow us to "find" them. Even if, somehow, Förster's constraints did determine what scenes should occur in the novel, the actual parts of the novel need to be *written*: the wording of the depiction of any

particular scene is left entirely out of view in Förster's example, but these are just the parts he is claiming to be able to produce when given "the idea for a novel – 'Nietzsche in Therapy'" (Förster 2012 259) and the transitions produced by the resulting narrative framework. At best, Förster's author will have found the *plot* of his novel, but not its *episodes*.[113] It is hard to see any way to fix this example to remove these flaws: even if the narrative framework was so detailed that only *this* scene could occur before *that* scene, and it *had* to begin *here* and end *there*, lest the very soul of the novel be betrayed, the actual writing of the book is not going to be completed by an exhaustive story-boarding of the tale.

Förster's example can be replaced, however, with one which seems better to present an inference from an "Idea" and a series of "transitions" to the "parts" transitioned between. Suppose someone is developing an expansion to a board game which has five factions, which are balanced against each other in definite, delicately-adjusted ways. He knows he can't add anything to the game which will make one faction more powerful than the others, or the game will be unbalanced; but he wants to add some things which only particular factions can use. He realizes that he can add new tools to each faction so long as what he adds makes use of the existing balancing forces between the factions, which he daren't risk upsetting. In a particular case, it might happen that the only way to add a new tool to any faction is to give each faction a new tool, and to determine which kind of tool each faction gets by what will maintain the balance

[113]These terms are taken from Aristotle's Poetics, which famously presented the plot of the Odyssey as follows: "A certain man has been abroad many years; Poseidon is ever on the watch for him, and he is all alone. Matters at home too have come to this, that his substance is being wasted and his son's death plotted by suitors to his wife. Then he arrives there himself after his grievous sufferings; reveals himself, and falls on his enemies; and the end is his salvation and their death. This being all that is proper to the *Odyssey,* everything else in it is episode." (Aristotle 18, 1455b23)

between the factions in the same way as before. Here the Idea of giving a new tool to the factions might be determined, by the "transitions" which are the balancing factors between the factions, to produce precisely a certain set of five tools, and no others.[114]

This kind of example will also work to give an instance where being provided with the "parts" and the "transitions" between them suffice for seeing the "Idea" behind them: In a game which has a set number of factions which are balanced in certain known ways, it is common for expansions to include new elements in "cycles", where each faction gets one new upgrade in parallel to the others; a player who sees two or three of these new upgrades is often able to tell what the other members in the cycle are, and to recognize that the cycle is a cycle. Here the particular elements of the cycle (often not even all of them) and the "transitions" between the factions are already known, and the "Idea" of the cycle can be easily seen by an experienced player.[115]

However, it is not clear whether Förster would accept my examples as examples of his method: the "transitions" in his examples of a film and a novel occur between elements which occur in a definite sequence, but the "transitions" in my examples do not: the balancing relations between factions might be circular, with Team A beating Team B beating Team C beating Team D beating Team E beating Team A being how the game is kept balanced. I do not know if this

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[114]These sorts of constraints commonly lead to "parallel designs" among different designers working on the same game project: many games have balancing constraints tight enough that they strongly determine future developments of the game (see (Rosewater 2015) on this phenomenon). These constraints usually somewhat underdetermine how a particular Idea for a game-expansion will be developed, but some cases can be found which are tight enough to support my revision of Förster's example – though they also highlight its artificiality, and how lacking in concrete applications Förster's inferentialist account of Ideas is.

[115]See (Rosewater 2002) on this phenomenon.

circularity disqualifies the balancing relations from being "transitions" in Förster's sense; he does not spell out this class of relations explicitly enough to tell.

There is another, related, unclarity in his examples: the scenes of the experimental film are supposed to be the "parts" of the film, and the "transitions" are what connects the scenes to one another; the "parts" are supposed to be seen on a first viewing, but the "transitions" not found until the movie is viewed in light of its climax. After the movie's "Idea" has been grasped, and the movie flows coherently, we are supposed to see the same "parts", only now "transitioned" between differently. But if the movie was truly unintelligible on first viewing, as Förster says it is, then it may be that seeing the scenes *as scenes* was not originally possible; a scene has to have a minimal level of internal coherence to be seen as a *single* scene, and not as a combination of multiple scenes (perhaps shot on the same set and from the same angle); each "part" of the movie itself is a series of transitions between elements in a definite sequence, as a scene in a film is spatially complex and viewed over time. As Förster says, when the movie starts to make sense to a viewer this illumination comes "in a flash": it is a natural extension of this image to think of the individual scenes, and not only their interconnections, becoming illuminated. It is not clear exactly how to spell out the part/transition distinction in Förster's film example, and not clear that this distinction can be sharpened in a way that will save Förster's claim that we apprehend the "parts" of the movie when it is seen as nonsensical, and only lack the "transitions" between these unintelligible parts. The novel case is no better in this regard: the distinction between a "narrative framework" (as a series of transitions) and the individual scenes (as a series of parts) in a story appears to be a matter of how general a view one is taking of the story, and not of intrinsically distinguishable aspects of it. It is not clear whether Förster's

examples can do the work he wants them to do in showing how to infer the third element from any two of Idea, transitions, and parts.

It is worth remembering at this point that Förster is explicit that he is only concerned with wholes which *do* consist of these three elements: he claims for his method only that "*if* a whole consists of these three elements and two of them are given, then I can infer the third element from them" (Förster 2012 259, emphasis in original). It is a presupposition of his examples that the experimental film and the novel are wholes which express an Idea through parts which transition between themselves; this is not established by the examples. As the fate of Goethe's third *Contribution to Optics* showed, it is possible to think one has found a whole of this sort when one has not. If Förster's "Methodology of the Intuitive Understanding" is adequate, then it needs to be able to show us whether we have a whole of this sort or not when we think we might have found one: we want to be able to avoid Goethe's mistake. So far the work Förster has called on Ideas to do could be done just as well by the mere illusion of Ideas.

VIII. Goethe's Second Solution to his "Paradox"

Förster attempts to show us how to avoid Goethe's mistake by looking at the historical case of Goethe again, this time in places where Förster does not think Goethe failed by his own lights. To complete his sequence of examples, Förster needs to follow his film and novel examples with a case where the parts and the transitions are given, and the Idea is inferred from them.

> Here I no longer need to construct an example, for this is exactly the case that Goethe seeks to solve with the help of his morphological method: all the parts ('the complete series') and the attentive observation of the transitions between them are to provide a basis for studying the idea underlying the whole. Here, too, I require two of the elements

> in order to find the third. The multiplication of the experiments on which Goethe insisted in "The Experiment as Mediator" thus represents only the *first* of two necessary steps: "Assiduously observe the transitions upon which, in the end, everything in nature depends," he would henceforth recommend. (Förster 2012 260).

Förster thinks that Goethe's failure in his "Experiment" essay was a natural one: "In contrast to the parts, of course, the transitions are not immediately given to sensibility – no more than they were in the mathematical series above" (Förster 2012 260). As we saw in the case of the mathematical series, it is not obvious that there are any interesting transitions to be seen there; a series of apparent "parts" of a "whole" might be simply an assemblage of unrelated items into an aggregate, which lacks any principle of unity beyond whatever we chose to give to it when clumping them together. If the reality of the relevant sorts of "transitions" in a particular case has not yet been established, then Förster needs to tell us how his "Methodology of the Intuitive Understanding" will establish it. But Förster immediately continues from the previous quotation that "since the transitions [between natural phenomena] have obviously taken place, it must be possible for me to re-produce them" (Förster 2012 260). This can be obvious only if, before applying Förster's Goethean method, we are assured that we have a whole of the requisite kind – a kind which a discursive understanding can never know there to be, a whole which determines its parts. Here is Förster presenting how this transition from a merely discursive understanding to an intuitive understanding is supposed to happen:

> Therefore it is particularly important that in the course of my re-producing [the transitions], "my thinking not separate itself from the objects; the elements of the objects, the intuitions, must enter into my thinking and be intimately informed by it, so that my intuiting becomes itself a thinking and my thinking an intuiting" ["Significant Help Given by an Ingenious Turn of Phrase", [1823] GSS 39]. As in the case of the mathematical

> series, so too in the case of the succession of phenomena: I must simulate the transitions in thought; in imagination, I must re-produce the manner in which each part has emerged from the previous state and how it passes over into the succeeding state. And then I have to make all the transitions present to my mind *at once* – and with this the discursive understanding becomes intuitive and intuition becomes a single intuition – like the idea (or formula), I must be present at all points simultaneously in order to recognize its causality.[116] (Förster 2012 260-261).

As Förster presents it, the transition from a merely discursive to an intuitive form of understanding appears to simply *happen* when we form an Idea of the right sort of whole in our mind by imaginatively re-combining the parts previously observed. But so far, nothing he has told us has ruled out that all such Ideas might be mere illusions, that apparent intuitions of wholes as wholes might only be the result of confusion. If Goethe's early color-theory failed to be *scientia intuitiva* because Goethe merely believed himself to have perceived the whole of color-phenomena as a whole, it is not obvious why this can't be true of Goethe's later scientific work, too.[117]

Förster's presentation of his Goethean method was always given under the condition that

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[116]This odd reference to an Idea's "causality" is in imitation of Spinoza; nothing hangs on it.

[117]The situation is not improved by Förster's bracketing of "Goethe's controversy with Newton" early in his book. He claims in a footnote in chapter seven that "Here is not the place to go into Goethe's controversy with Newton. I will merely say that it cannot be decided on the basis of current physics since what is at stake is *scientia intuitiva* precisely as a *methodological alternative* to current physics" (Förster 2012 169). Given the impressive advances in the history of optics since Goethe's time, it is very odd that Förster thinks he doesn't need to address the status of the *Farbenlehre* as viewed by contemporary physics, let alone the Newtonian polemics which Goethe labored so hard on. For a sympathetic account of Goethe's optics which argues that he was led to deny the objectivity of the color-spectrum (and so its basis in the different refrangibility of light-rays) because of being mislead by the Bezold-Brücke phenomenon, see (Duck 1987).

it was to be useful "*if* a whole consists of these three parts", but now this method is called upon to determine whether we have such a whole: "In summary, then, we can say that *if* an Idea lies at the basis of a set of phenomena and is operative in all its parts, then that fact can only be recognized by the method described here. *Whether or not* an idea in this sense lies at the foundation of a set of phenomena can also only be determined in this way" (Förster 2012 264, emphasis in original). Förster's thinking here appears to be the following: we can have a series of phenomena which are the result of an Idea without knowing that they are the result of an Idea, and follow the transitions between those phenomena without knowing that these are the transitions through which that Idea unfolds itself; doing this will produce in us knowledge of the Idea underlying the phenomena. But the only thing given to sensibility before this is done, on Förster's own account, is the "parts" without the "transitions": the transitions have to be added by us in a reproductive use of the imagination. This can be done by a merely discursive intellect, which can only intuit wholes by first intuiting their parts. If intuiting a whole by first intuiting its parts, when this occurs after imaginatively reproducing those parts in their own sequence, leads to a sudden psychological shift into a new kind of mindedness, then Förster can rest with the claims he has made.

But this psychological claim is hard to take seriously, and Förster does little to motivate it. If this psychological claim were true, then Förster's claim that "*if* a whole consists of these three parts" we can infer any one from the other two would still be confused: he should instead have told us that if two of these parts are given, we can produce the third by the Idea producing in us a special kind of psychological shift, which we should not confuse with inference. Inference is not the term for this kind of psychological development; it is not like anything that can be

codified in a proof. Förster's reliance on an inferentialist approach to moments of thought prevents him from truly grasping the logic of Ideas, which unify the logical moments of universal, particular, and singular in a non-inferential manner. If this sheer positing of the empirical production of new mental powers is what Förster's Goethean methodology is reduced to, then it is not an attractive replacement for any element of Kant's view of our intellectual life. Förster claimed he would provide us with a method to tell whether or not an Idea lied beneath a group of phenomena; instead he provides us with a method, and an assurance that this method is psychologically effective in producing in us a new power of detecting Ideas. But Goethe's own examples show that there are shortcomings in his method which Förster is neglecting.

IX. Significant Help given by an Accidental Turn of Phrase

There is a hint of a better way of thinking about methodology in Förster's chapter on the "Methodology of the Intuitive Understanding", however. Towards the end of the chapter, Förster mentions Goethe's distinction between two kinds of biological "laws": the "law of inner nature, by which plants are constituted" and "the law of external circumstances, by which plants are modified". (Förster 2012 275, quoting Goethe's *Vorarbeiten zu einer Phsyiologie der Pflanzen* [1796]). Förster notes that Goethe was especially interested in the first kind of "law", with what constitutes a plant as a plant: "In order to recognize it, a different kind of observation and thinking is necessary than in the study of inorganic nature. [...] it is the method of an intuitive understanding" (Förster 2012 276). Here, unlike in most of Förster's book, the intuitive understanding is needed specifically for understanding a certain kind of phenomena, "organic" as opposed to "inorganic" nature. Förster characterizes "inorganic products of nature [as subject] only to chemical and mechanical processes" (Förster 2012 276); a discursive understanding is

implicitly adequate for understanding them. An intuitive understanding is here needed only to understand a special kind of phenomena, which are subject to special kinds of processes. This sits uneasily next to Förster's praise for Goethe's color-theory and Hegel's Absolute Idea.[118] In those contexts it appeared that an intuitive understanding is needed for a fully adequate grasping of any phenomena whatsoever: colors are not alive, and neither is existence as a whole, but the intuitive understanding was invoked to fully comprehend them. It may be the case that only this less ambitious claim can be saved from Förster's "Methodology of the Intuitive Understanding": our understanding is, among other things intuitive, for we are able to understand organic nature, living wholes as wholes – but extravagant Goethean methodological claims do not provide us with the key to unlocking how this is possible. Goethe deserves credit for insisting that this "higher" type of knowledge must be possible, and Förster deserves credit for bringing this insistence to light, but Hegel deserves the credit for giving us the best account of our knowledge of living nature. But before turning to Hegel, I will continue my account of Goethe, building gradually to Hegel by developing the background in which he worked.

X. Preliminary Discussion of Morphology

In following out on a topic that Förster neglects, I should not give the impression he *entirely* neglects it; Förster does try to fit Goethe's morphological work into his inferentialist schema for *scientia intuitiva*. But Förster clearly takes Goethe's optical studies as his paradigm both for inquiry generally and for how Ideas can function in thinking, and interprets Goethe's morphological studies in light of this paradigm. I will instead focus on Goethe's botany for making sense of what is of lasting significance in Goethe for our understanding of science.

[118]On the Absolute Idea, see (Förster 2012 282) and *passim*.

Förster's understanding of Goethe's botany will be analyzed first, to do justice to it in its own right; my own understanding of it will unfold in the course of my internal critique of Förster.

Though Förster devotes the lion's share of his chapter on "The Methodology of the Intuitive Intellect" to Goethe's optics and color-theory, he also offers as an example a "second illustration of Goethe's methodology from his *Metamorphosis of Plants*" (Förster 2012 271). Förster says that in his botany, even more than in his optics, it is easy to see "how Goethe differs from Kant. Kant [denied that we could have] genuine knowledge even *that* [plants] are organisms. Goethe, on the other hand, begins by asking what makes certain products of nature *plants* – he asks what is common to all plants *as* plants such that they form a natural kingdom of their own. And he asks why this common element appears in such a plethora of forms." (Förster 2012 271, emphasis in original)

As we will see later when looking at the history of Goethe's scientific endeavors, Goethe was partly motivated by this Platonic desire to know the "Form of Planthood" that makes all plants plants; Förster skims over some of this history when presenting his account of Metamorphosis of Plants. In this short work Goethe did not attempt to realize his full ambitions, but aimed only to give an account of annual, flowering, plants; Förster does not draw attention to this fact about Metamorphosis, though it is significant. As with his other examples of knowledge through Ideas, Förster says we must pay "special attention with Goethe to the transitions between the individual stages of development" (Förster 2012 271-2). These stages are six, and we are especially supposed to notice that the transitions between them fall into one of two categories: each stage either "expands" or "contracts" in transitioning to the next stage.

The first stage of the annual plant is the seed; this expands into the second stage by

dividing itself into roots which extend downwards and a stem which extends upwards. The stem initially expands itself out of itself as well, shooting forth cotyledons and stem-leaves. As the stem grows taller, the third stage occurs: the leaves on the stem become smaller, contracting back towards the stem as it approaches a certain height. Once it reaches this height, this third stage reaches its climax in the formation of a calyx of sepals in the bud of the plant. The fourth stage then begins with the expansion out of the calyx of the petals of the flower; simultaneously, a further contraction from the inwardness of the sepals occurs in the formation of the stamen and pistil, which is the fifth stage. The expansion of the pistils into a fruit is the sixth and final stage of the annual plant, and is simultaneously the contraction of the entire plant into new seeds in which the process will continue.[119]

As Förster notes, we cannot literally observe this happening; the timescale is normally too long for us to see plants move themselves at all.[120] To see the pattern Goethe observed in annual plants, we must "retrace this movement in the imagination" (Förster 2012 272) – as Kant puts it in a related case, to perceive Goethe's ideal annual plant I must represent "the object which corresponds to this concept either by imagination alone, in pure intuition, or in accordance therewith also on paper, in empirical intuition"[121] (A713/B741); it is easier to imagine things

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[119]Förster has some useful diagrams illustrating this on pages 272/273 of (Förster 2012).

[120]Despite widespread Aristotelain prejudice to the contrary (to which Hegel was unfortunately subject, as I will discuss in an appendix to my last chapter), plants do move themselves quite a bit. See the time-lapse films of Roger Hangarter for an entertaining corrective to this prejudice. Sadly, Goethe died before the invention of film, or even of the flipbook, and so was forced to illustrate the motions he cared about entirely with static images. The liveliness of living nature is easier to depict now that we have animation technologies, as their name suggests.

[121]Kant is here discussing mathematical constructions, specifically the construction of a triangle; the passage continues "– in both cases completely *a priori*, without having borrowed the

while also sketching them out with a pencil. When we imaginatively reproduce the whole process of the annual plant through its six stages, "we notice a threefold alternation of expansion (E) and contraction (C): in the formation of the stem and leaves the alternation is *successive*, in the formation of the blossoms it is *parallel*, and in the formation of the fruit and seed it is *nested* and interlocking." (Förster 2012 272) Goethe is confident that he has uncovered something genuinely fruitful in this investigation of the annnual plant:

> We are convinced that with a little practice the observer will find it easy to explain the various forms of flowers and fruits in this way. To do so, however, requires that he feel as comfortable working with the principles established above – expansion and contraction, compaction and anastomosis [the process that forms the "skin" joining the "veins" in a leaf] – as he would with algebraic formulas. Here it is crucial that we thoroughly observe and compare the different stages nature goes through in the formation of genera, species, and varieties, as well as in the growth of each individual plant. For this reason alone, it would be both pleasant and useful to have a collection of properly arranged illustrations labeled with the botanical terms for the different parts of the plant. (GSS 92-3)

In many different cases in nature, Goethe sees the same two basic "forces" at work: expansion and contraction, going outwards and coming back inwards. He invites his reader to see things as

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pattern from any experience. The single figure which we draw is empirical, and yet it serves to express the concept, without impairing its universality. For in this empirical intuition we consider only the act whereby we construct the concept, and abstract from the many determinations (for instance, the magnitude of the sides and of the angles), which are quite indifferent, as not altering the concept 'triangle'." (A713-4/B741-2) It is interesting to consider all the ways in which Goethean auxiliary illustrations are similar to and different from mathematical constructions, but a discussion of this is beyond the scope of my dissertation. An obvious distinction is that Kant's mathematical constructions are supposed to be *a priori*, free constructions of the human mind, while Goethe's are meant to be empirical constructions that capture an observed pattern in nature. Förster has some relevant remarks on the topic, made while discussing Schelling's use of "construction"-language and Hegel's gradually critical attitude towards it. See for example (Förster 2012 292, *passim*).

he has seen them.

It can be puzzling to say just what it is Goethe thinks he has achieved in producing this first effort in morphology. Förster clearly feels the pull of such puzzlement:

> But what exactly is it that is doing the expanding and contracting in these six stages? It is obviously not any one of the visible parts of the plant. The sepal, for example, does not emerge from the stem leaf in any physical sense; it just follows upon it. So what expands and contracts and becomes concrete in such a variety of ways in the individual parts is, in the first instance, a form that can only be apprehended in thought. When Goethe first realized this he made the following note in his diary: “Hypothesis: Everything is leaf, and the greatest diversity becomes possible through this simplicity.” What he means by 'leaf' is not the sensuously given leaf, but rather an ideal organ from which all the physical forms of the plant can be formed by way of transformation so that the petals, too, and the stamen and pistils must be considered as metamorphosed leaves. The fact that they look different when viewed superficially is itself a merely superficial fact. According to the hypothesis, the plant's visible parts are merely particular formations of an undelying ideal form which presents itself ever anew at every nodal point, repeating its work. Thus, 'everything is leaf' must be understood as meaning that all the forms taken on by the plant are, *in respect to their idea*, identical. (Förster 2012 273-4, emphasis in original, citation deleted)

Förster continues by endorsing the grand claims Goethe made for his achievement:

> Once I have apprehended this ideal archetype in thought, I can mentally construct a plant by letting its essential forms emerge out of each other. I can produce plant forms which represent *real possibilities* since they conform to the archetype of the plant and hence *could* exist in nature given suitable conditions. This we could call a construction of the plant in inner intuitiom, whose governing law can be re-discovered by outer intuition. Goethe once put it like this: “Tell Herder that I am very close to unraveling the secret of the generation and organization of plants and that it is the simplest thing you can imagine ... The *Urpflanze* will be the most remarkable creature in the world and even nature

> herself will envy me for it. With this model and the key to it, an infinite variety of plants can be invented, which are consistent, that is, they are such that, even if they do not exist, they *could* exist, and thus are more than just painterly or poetic shadows and apparitions, for they possess an inner truth and beauty." (Förster 2012 274, emphases and ellipses in original, citation deleted)

In this way Förster assimilates Goethean morphology to his general picture of knowledge through Ideas: by observing the particular stages of annual plants and noticing the (ideal) transitions between seed, stem leaf, calyx, petals, pistil and stamen, fruit, and seed again I can grasp the "Idea" at work in plants. The first two are to be given through careful observation; the third then is then inferred by thought as a "hypothesis". That Goethe call this leaf-Idea a "hypothesis" already shows that the example fits uncomfortably in Förster's model; Förster now does not even claim the kind of necessity that was claimed for Ideas in the case of optics. The fact that the transitions are not literally "given" in observation, but observed through imaginative reproduction of what has been given, is a further problem: it looks like the method we have actually followed, following Goethe as Förster presents him, is to grasp the "transitions" between the "stages" only as presented by someone who already claims to have grasped the Idea of plants. The transitions were not themselves observable; mere observation also does not tell us where to look for the six "stages", or that there should be precisely six of them. Goethe, as a practicing morphologist, does this work; observation does not, nor does inference. In an important sense, *none* of the three moments "stages", "transitions", or "Idea" were given at the start; all three come into view only through the labors of the Goethean morphologist, who hoped to get us to think of plants in a way we hadn't before. The "transitions" Goethe urged us to attend to are not phenomena observed before we had seen what he wanted us to see, but were idealizations he

wanted us to learn how to imaginatively model. It is thus puzzling how Förster could think that any of his three moments might have been inferred from the others; an inference is only as secure as its least secure essential premise.

On Förster's picture of knowledge through Ideas, they are also supposed to provide us with knowledge of individuals; this seems to be just what Goethe bragged about in his letter to Herder. But we really get something different than knowledge of individual plants through gaining knowledge of the Idea of the annual plant; as Förster admitted, we get what he now calls the "real possibility" of particular types of plants, not new knowledge of actual plants. Förster attempts to accomodate this wrinkle in the closing pages of his chapter:

> Every idea also requires for its *physical* realization a material basis onto which it can imprint itself, but which in turn constrains and limits it. No single realization manifests the idea as such, but always only one of its countless possibilities to the exclusion of all others. The idea cannot therefore be discovered in the external world, but only in the intuitive understanding.[122] Once it has been discovered, however, its effects can be re-discovered in experience. A plant that is present in material form can undergo a variety of transformations. [...] The variations in form are a product of interaction with the environment. Goethe encounters the "innocent coltsfoot," familiar to him from Weimar, in the saline soil of Venice, but in a different form, "armed with sharp weapons" and with leaves of leather, and fatty mast-like stems. In other climes the *Urform* appears in quite different plants. The whole wealth of the plant world is thus governed by two kinds of laws: on the one hand, the internal law proper to the plants as such that manifests itself in every individual plant; on the other hand, the laws of environmental effects, adaptation and selection, which manifest themselves in the variety of plants. (Förster 2012 275,

[122]Note that here "intuitive understanding" has ceased to name a faculty for grasping wholes as wholes; it is in this sentence something like Platonic νοῦς, apprehending Ideas outside of the "external world".

emphasis in original, citation deleted)

But Förster concedes too much with this revision of his views. If knowledge of Ideas only goes so far as to give us knowledge of something which *might* exist, depending on the interactions of material factors, then we can never actually achieve knowledge of anything physical as a "realization" of an Idea: such an "Idea" is a mere concept of the understanding or "analytic universal", a way of thinking of things which may or may not have contingent application to any individuals. Such an "Idea" would separate possibility and actuality in a way that Ideas grasped by an intuitive intellect are supposed to unify them; it would not be an Idea in Hegel's sense. If we are actually to have knowledge of anything in nature through something like Goethe's Idea of the *Urpflanze*, we must supplement the skeletal account Förster takes from Metamorphosis of Plants with an account of how this "ideal leaf" is formed in interactions with the environment of the living plant: as I argued in earlier chapters, the genus-process and the structure-process must be grasped alongside the assimilation-process, as these three processes are really only different facets of the single life-process of the plant. There really is no "internal law proper to the plants as such" apart from the unity of their different ways of interacting with the environment: it is only because of the plant's environment that anything like "expansion" or "contraction" occurs at any point in a plant's development, so we might with equal justice call the Metamorphosis's six stages "the law of environmental effects" – it is the law which determines that the effects of the environment on an annual plant will, if all goes well with the plant, take it from seed to stem to bud to flower to pistil and stamen to fruit to seed again. To the extent that there is such a "law", it is not something independent of "adaptation and selection" (by which Förster presumably meant all evolutionary factors), but is something which is entirely internal to them, and cannot exist

apart from them. The unity of the ideal plant is nothing outside of the unity of individual plants across their alteration and development, which exist only within the whole of nature acting through time; what Goethe discovered can only be a unity within these individuals across time, for there is nothing alive outside of these individuals.

Förster gives into a Platonic temptation that Goethe was sometimes prone to, but usually better than: he claims to have achieved knowledge through "the intuitive understanding" of something which cannot be found in nature, but upon which nature depends, and which is thus independent of nature. This Platonic temptation renders nature herself as the mere "material basis" upon which a form "can imprint itself"; this is the opposite of Goethe's intention, which was to find a way to appreciate nature's power to bring forms forth out of itself, as "living nature". Goethe, in his *Experiment* essay, sought for a way to overcome dualisms of subjective categories and objective materials in scientific practice; Förster, in the closing pages of his chapter on "The Methodology of the Intuitive Understanding", reintroduces just such a dualism. If there is something promising in Goethe's "intuitive understanding" and the notion of knowledge of nature through Ideas, then we must do a better job at rehabilitating it than Förster has.

XI. A Story about Goethe

Robert Richards gives a thorough account of Goethe's historical development in his 2002 book The Romantic Conception of Life: Science and Philosophy in the Age of Goethe, especially chapters 10 and 11. Richards's interest in these chapters is primarily to situate Goethe's scientific work alongside his poetic compositions and events in his personal life, especially his dealings with women; I want only to pick out details of this history, as a counterpoint to Förster's

too-streamlined narrative of Goethe as a practicing scientist. Förster's account of Goethe is oriented by his desire to extract *a* method from Goethe which will enable him to resolve the puzzles Goethe laid out in his *Experiment* essay, and which Goethe could be shown to have employed in both his morphology and his optics. As I have shown, Förster ends up attributing a strikingly Platonistic account of scientific inquiry to Goethe, reliant on a kind of extramundane insight that is then put to work in practical morphology. Closer attention to Goethe's history, as presented by Richards, shows that the truth is rather more complicated than this: the Platonic urge is *one* element in the development in Goethe's morphology, and it is not one which it is promising to focus on. There are other elements which better reward attending to.

As Richards tells the story, Goethe's interest in botany began in 1785, when Goethe began reading Linnaeus and made the acquaintance of "the botanist August Johann Batsch, for whom he secured a university position." (Richards 375) In his *Systema Naturae*, Linnaeus famously presented an elegantly unified account of the animal kingdom, but a very inelegantly unified account of the plant kingdom. For the animals, Linnaeus laid out six classes: Mammals, Birds, Amphibians, Fish, Insects, and Worms; this classificatory scheme is not too dissimilar to those still presented to schoolchildren, and used to organize the layout of zoos. But for the plants, Linnaeus laid out a whopping twenty-four classes, most distinguished simply by counting the stamens on their flowers. While Linnaeus's plant classifications were useful for the practical identification of plants, it lacked the elegance of his animal categories. Goethe thus took up the idea of finding a more natural way to unify the plant kingdom, to replace Linnaeus's grab-bag categories. He quickly became optimistic about this project. In the summer of 1786 he wrote to Charlotte von Stein that

> The enormous realm [of plants] simplifies itself in my soul, so that I can dispatch the most difficult task quickly. If only I were able to convey the insight and the joy to someone, but it is not possible. And it is no dream, no fantasy. It is recognition of the essential form [*der wesentlich Form*] with which nature always plays, and in such playing brings forth the variety of life. (Quoted in Richards 376)

Goethe was thus quickly convinced that he possessed some kind of ineffable insight that was responsible for his success in the study of plants. His optimism in this was supplemented by a boldness found in the study of Spinoza, who he had been reading with von Stein a year prior, with Herder's encouragement. Goethe expresses this boldness in a letter to Jacobi from May of 1786:

> When you say man can only believe in God, I say to you that I hold much with seeing. And when Spinoza speaks of *scientia intuitiva*, and says: "This mode of knowing proceeds from an adequate idea of the formal essence of certain attributes of God to adequate knowledge of the essence of things" – these few words give me courage to dedicate my whole life to the consideration of things that I touch and of whose formal essence I can hope to form an adequate idea, without worrying how far I will come and what is denied me. (Quoted in Richards 380)

In this early reference to *scientia intuitiva*, Goethe explicitly links his understanding of this Spinozistic notion with "seeing" and "touching"; this is quite a striking move, for when Spinoza gives examples of *scientia intuiva* he mentions only knowledge of things like triangles. *Scientia intuitiva* of a triangle, as Spinoza considered it, would seem to move from knowledge of "the formal essence of a certain attribute of God", namely extension, to knowledge of "the essence of a thing", namely a particular triangle constructed in God's extension, through a kind of flash of

geometrical insight. It is puzzling[123] how Goethe might have taken the passage he quoted to Jacobi as giving him license to think that anything comparable might be possible in his botanical studies, but Goethe clearly did connect his boldness as an investigator of nature with Spinozism: he says that these words of Spinoza give him courage to say, *contra* Jacobi, that God might be seen and touched rather than merely approached in faith.

With this Spinozistic courage and confidence in his ineffable insight into plants, Goethe continued his botanical studies after he began his famous Italian journey in September of 1786. But early in this trip, Goethe began to feel that his entire person was being rebuilt from the ground up. As he put it in a letter to von Stein in December of that year, "I thought I would, indeed, learn something here, but that I would have to return to primary school, that I would have to unlearn so much – well, I didn't count on that." (Quoted in Richards 383) This rejuvenation is

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[123]This puzzlement is only pushed back a step by noting that Goethe's early conversations about Spinoza inspired much of Herder's book God: Some Conversations, where similarly odd readings of Spinoza are found. In Herder's Conversations, Spinoza is interpreted by means of the hermeneutically unjustified replacement of his central notion of "attribute" with talk of *forces*. Philolaus, one of the two main speakers in Herder's dialogue, who some read as a stand-in for Goethe, introduces the revision as follows: "We dispense with that offensive and inappropriate word 'attribute' entirely and replace it with the doctrine: '*That the deity reveals Himself in an infinite number of forces in an infinite number of ways*.'" (Herder 103) This adjustment to Spinoza's text is introduced as an anti-Cartesian maneuver, to free Spinoza of the need to account for the interaction of body and mind (more generally, of modes understood under the attribute of extension and modes understood under the attribute of thought). That it has not even this much justification is shown when Theophron, the other main character in the dialogue, who some read as Herder's stand-in, claims that Philolaus is committed to a sort of "pre-established harmony" no less mysterious than Leibniz's, despite his replacement of the extended body and the thinking mind with talk of different sorts of forces: "Though there no longer remained any pre-established harmony between spirit and body but rather a harmony between forces and forces, there was nevertheless still a harmony. For who could, and who indeed can now, explain how force works upon force?" (Herder 110) Goethe's reading of Spinoza is thus little clarified by turning to Herder's book; Herder merely testifies to the fact that Goethe somehow read Spinoza in an odd way, doing little to elucidate *how* Goethe could have found such things in Spinoza's text.

a recurring theme in Goethe's Italian Journey, as he titled the work which collected his letters from that trip. Richards is especially concerned with Goethe's romantic and sexual awakening in Italy, even suggesting that we might date Goethe's long-delayed loss of his virginity to between January 22 and February 16 of 1788 (Richards 389). These romantic escapades and Goethe's study of Roman art occupied much of his time in Italy. But while relaxing in the gardens of Palermo in April of 1787 with a copy of Homer's *Odyssey*, Goethe again reflected on his botanical studies, asking himself

> Whether I might not find the *Urpflanze* within this mass of plants? Something like that must exist! How else would I recognize that this structure or that was a plant, if they were not all formed according to a model. (Quoted in Richards 395)

This episode in the gardens of Palermo was also the occasion for Goethe's first jotting down in his diary that "All is leaf, and through this simplicity the greatest multiplicity is possible", as mentioned above when discussing the Metamorphosis of Plants. This hypothesis was about trying to find a general model of plant-construction.

It is important to realize that Goethe really did contribute something lasting to the sciences in his work with plants. A recent popular textbook on plant morphology introduces the concept of homology by praising Goethe:

> The essence of the idea of homology was expressed by the great poet and philosopher Johann Wolfgang von Goethe, to whom we owe the word "morphology" (literally, the science of form). Goethe sought for the nature of the morphological relationships among the various kinds of leafy appendages in higher plants. In his celebrated essay, *Metamorphosis in Plants,* [sic] published in 1790, he concluded that no real boundary exists between such organs as cotyledons, foliage leaves, bracts, and the organs of the flower – all are expressions of the same type of organ, i.e., the leaf. To quote from R.H.

> Eyde (1975, p.431): "Goethe explained that a term is needed to cover all manifestations of the metamorphosed organ; hence he adopted the word *leaf*." He believed that "all plant appendages are variants of an intuitively perceived ideal appendage, the primal leaf, which somehow contains all its own transformations." Although Goethe's theory has been criticized as an example of idealistic, even metaphysical morphology, it has proved an extremely astute viewpoint and indeed constitutes the theoretical basis for the current view that the flower is a determinate axis with modified foliar appendages (see Chapter 19). (Gifford and Foster 2)

If one turns to Chapter 19 of this textbook, on flowering plants, one finds that "Goethe 1790" is one of three authors cited to provide "background on the theory" of flowers presented in the chapter – and the other two are secondary works on Goethe's botany.

It is not entirely uncontroversial to claim that the morphological inquiries Goethe instigated have continued to bear fruit; "adaptationist" approaches to biology have blinded many to the biological facts. The Austrian zoologist Rupert Riedl expressed the state of play in 1977 as follows; not as much has changed since then as one might hope:

> The living world happens to be crowded by universal patterns of organization which, most obviously, find no direct explanation through environmental conditions or adaptive radiation, but exist primarily through universal requirements which can only be expected under the systems conditions of complex organization itself. At this point I must convince the reader that I will not lead him into doubtful notions of natural philosophy but rather to hard facts, which have, some for generations, others for centuries, been clearly defined within the field of "general morphology." This is not self-evident, for the whole of the huge and profound thought collected in the field of morphology, from Goethe to Remane, has virtually been cut off from modern biology (Remane, 1952; 2nd ed., 1971, no English version). It is not taught in most American universities. Even the teachers who could teach it have disappeared. But morphology contains principles indispensable for detecting natural relationships that, consciously or subconsciously, have been the basis for all solid

> comparative anatomy and systematics. That these principles are correct has been clearly demonstrated by the resulting "natural system" which has become the backbone of biology, and the base from which the origin of species and man's place in nature have been discovered. (Riedl 352)

Gould & Lewontin quote from this section of Riedl's essay in their famous paper *The Spandrels of San Marco and the Panglossian Paradigm* in its final section, "Another, and Unfairly Maligned, Approach to Evolution" (Gould & Lewontin 593).[124] The "*Baupläne*" championed in this section of their essay are just the sorts of "universal patterns of organization" that morphology brings to light. The great achievements in biology since Darwin have not made morphological study obsolete, but have given it a new importance, as Darwin's advances gave a new importance to so many facets of the biological sciences. It would be foolish to pretend that biology could now be done as if nothing had changed since before Darwin's impact, but it would be just as foolish to pretend that the scientific study of living nature did not exist before Darwin. This is one of the benefits of focusing on views on the study of living nature from before Darwin wrote: they help one to avoid the presentist delusion that only recently has living nature given herself up to natural inquiry, as though in the past she was only gawked at by dabblers and

[124]For an extension and defense of Gould and Lewontin on this point, see (Lloyd 2015).

madmen.[125] [126]

While Goethe had claimed to grasp the "essential form" of plants in his 1786 letter to von Stein, in Palermo in April of 1787 Goethe again takes himself to have this task ahead of him: he still needs to *find* what it is that makes this-or-that structure count as a plant, and he hoped to uncover it in the beautiful gardens of Palermo. He was confident that he could do this, however; he had written a month earlier "Please tell Herder that my botanical discoveries are continually advancing; it is still the same principle, but it requires a whole life to work it out." (March 13) and a little later "Tell Herder that I am very near finding the *Urpflanze*; only I fear that no one will be able to trace in it the rest of the vegetable kingdom." (March 25).[127] It was the insight Goethe ultimately articulated in Palermo which led to the composition of his Metamorphosis of

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[125]Along similar lines, Hannah Ginsborg has appealed to both Kant and Aristotle in opposing the reduction of biology to the type of inquiry found in Newtonian physics, see (Ginsborg 2004). Many philosophers influenced by "virtue ethics" have made similar appeals to Aristotlean views of living nature in defending the autonomy of their views from "bald naturalist" (McDowell 1994) attempts to assimilate all types of inquiry to a stereotypical approach to physics: See (Thompson 2008), (Rödl 2007), (Foot 2003a and 2003b), and (Anscombe 1958) for examples and discussion of this approach.

[126]For further discussion of Goethe's botany, see (Bortoft 1996), (Arber 1912 and 1937), (Brady 1987 and 1998), and (Bochemuhl 1998).

[127]Translated in (Goethe 1989). Richards renders this second passage differently: "I have come to terms with the *Urpflanze*; only I fear that no one will wish to recognize the rest of the plant world therein." (Quoted in Richards 397) But as Richards himself narrates, Goethe took himself to be still in *search* of the *Urpflanze* a month later, in Palermo. I conjecture that Richards was led to this mistake by the fact that he presents these two episodes out of order, returning to the letters from March only after discussing Goethe's time in Palermo, in April. The relevant German is "Herdern bitte ich zu sagen, daß ich mit der Urpflanze bald zustande bin, nur fürchte ich, daß niemand die übrige Pflanzenwelt darin wird erkennen wollen. Meine famose Lehre von den Kotyledonen ist so sublimiert, daß man schwerlich wird weiter gehen können." (GIR 37) I have not been able to discover what Goethe was referring to as his "famous doctrine of the cotyledons"; it was presumably known to Herder, but may have never been committed to writing.

Plants.

Another letter to von Stein, from June of that year, contains Goethe's proudest boastings of his botanical achievements:

> Tell Herder that I am very near to the secret of the generation of plants and their organization and that it is the simplest thing conceivable. Under these skies, one can make the most beautiful observations. Tell him that I have very clearly and doubtlessly uncovered the principle point where the germ is located and that I am in sight, on the whole, of everything else and that only a few points must yet be determined. The *Urpflanze* will be the most wonderful creation on the earth; nature herself will envy me. With this model and its key, one can, as a consequence, discover an infinity of plants – that is, even those that do not yet exist, because they could exist. It will not be some sketchy or fictive shadow or appearance, but will have an inner truth and necessity. The same law will be applicable to all other living things. (Quoted in Richards 401-2)

It is with this spirit, vitalized by the thought that *all is leaf*, that Goethe began to compose his Metamorphosis of Plants when he returned to Weimar in 1788. Adding to his Italian observations by meticulous cultivation of the gardens at his own home, and discussing matters with the naturalist Batsch, Goethe began composing his little essay in November of 1789. It was published the next year.

It is important to notice that Goethe's botanical work came to a climax before Goethe had read Kant's Critique of Judgement, as the book didn't exist until shortly before Goethe's Metamorphosis was published. Goethe had previously read the first Critique and the Metaphysical Foundations of Natural Science, and studied the former with Karl Reinhold in Jena. In his Metaphysical Foundations Kant had argued that matter, as the object of outer sense as such, must be constituted by the interactions of two opposed forces of attraction and repulsion.

Richards suggests that Kant may thus have been "perhaps the source of Goethe's conception of plant stages as alterations of expansion and contraction of the elemental organ." (Richards 429) If Goethe did take the alternating contraction and expansion of the "leaf in the transcendental sense" to be akin to the twin forces at work in Kantian matter, he never says this explicitly. There is also a very important difference between Kant's opposed forces and Goethe's alternating forces: Kantian matter is always *simultaneously* repelling and attracting other matter; Goethe's leaves *alternatively* expand and contract in the development of the annual flowering plant. For Kant attraction without repulsion would lead to the collapse of all matter into a point, and repulsion without attraction would lead to the infinite expansion of matter, so that no bodies ever cohered; both forces must always be at work if a material body exists at all. The similarity between the two conceptions does not seem to go further than that expanding leaves can be drawn with arrows pointing outwards, as can a body exerting a repulsive force, and similarly for contracting leaves and a body exerting an attractive force.

But Goethe began to take definite, documented inspiration from Kant after acquiring his Critique of Judgement. As Richards documents:

> In October 1790 Körner wrote Schiller that he had spoken with Goethe in Dresden: "Where we found the points in common to speak about – well, you'll never guess. Where else, in Kant! He has found nourishment for his philosophy in the critique of teleological judgment." Schiller responded with his own tale of discussing Kant with Goethe, on the occasion of their first meeting: "Yesterday he was with us and our conversation soon came to Kant. It's interesting how he dresses everything up in his own style and manner and renders rather surprisingly what he has read. But I didn't want to argue with him about matters very close to my own interest." (Richards 429)

This second letter is dated November 1, 1790; four years later, Schiller will change his mind

about arguing with Goethe about Kant.

We know of this second episode only from Goethe's later narration of it; he published an account of it in *Zur Morphologie* in 1817, but we also have a record of him telling the tale of it in a diary entry from 1815, made by Goethe's friend Boisserée. Here is how Boisserée records the story:

> As he afterwards saw Schiller in Jena and related to him his view of the matter, Schiller immediately cried: 'But that is an idea.' Goethe with his naive sensibility said quickly: "I don't know what an idea is; I see it actually in all plants. (Quoted in Richards 424-425 FN 48)

Goethe gives a fuller account of the episode in his essay "Fortunate Encounter", published in *Zur Morphologie*. At the time of this conversation, Goethe and Schiller had become estranged over aesthetic claims Schiller had made in his essay *On Grace and Dignity*. Mutual friends had tried to reconcile them, but to no avail. I will let Goethe take over narration from here, as he tells his story well:

> Schiller moved to Jena, but I did not see him there either. Batsch, with enormous energy, had in the meantime founded a society for scientific research, equipped with a wonderful collection of materials and substantial resources. I often attended its periodic meetings. At one such meeting I found Schiller also in attendance. We happened to leave the meeting at the same time, and a conversation ensued. He seemed interested in the presentation, but commented intelligently and perceptively that such a fragmented way of dealing with nature could hardly appeal to any layman who wished to pursue the topic. I welcomed his remarks.
>
> I replied that this method would probably disconcert even the initiated, and that a different approach might well be discovered, not by concentrating on separate and isolated elements of nature but by portraying it as alive and active, with its efforts directed from the whole to the parts. He asked me to explain this point further, but was

> unable to hide his doubts. He could not agree that what I described might be derived directly from empirical observation.
>
> We reached his house, and our conversation drew me in. There I gave an enthusiastic description of the metamorphosis of plants, and with a few characteristic strokes of the pen I caused a symbolic plant to spring up before his eyes, He heard and saw all this with great interest, with unmistakable power of comprehension. But when I stopped he shook his head and said "That is not an observation from experience. That is an idea." Taken aback and somewhat annoyed, I paused: with this comment he had touched on the very point that divided us. It evoked memories of the views he had expressed in "On Grace and Dignity"; my old resentment began to rise in me. I collected my wits, however, and replied, "Then I may rejoice that I have ideas without knowing it, and can even see them with my own eyes."
>
> Schiller [...] answered as a cultivated Kantian, and when my stubborn realism touched off a lively rejoinder we embarked on a long struggle, then arrived at a truce. Neither of us could claim victory; each was convinced his position was impregnable. Statements like the following made me quite unhappy: "How can we ever have an experience which conforms with an idea? An experience can never be congruent with an idea – that is precisely what makes an idea unique." If he viewed what I called experience as an idea, surely some mediating element, some connecting element, must lie between the two! (GSS 19-20)

This interchange with Schiller brings out much of what I find interesting in Goethe: the claim, paradoxical to Schiller's Kantian ears, to "see" Ideas; disputes over what to call "experience" and what to deny can ever possibly be an experience; Goethe's botanical efforts summed up with "a few characteristic strokes of the pen". Goethe says that this episode (and the renewed friendship with Schiller which followed it) "led to the gradual development of my aptitude for philosophy (insofar as such an aptitude lay in my nature)." (GSS 20-21) In writing "Fortunate Encounter" Goethe is exhibiting the results of his philosophical development: he now, years later, sees that

the dispute with Schiller came to loggerheads over the question of what experience might possibly be like. Goethe took himself to have had experiences which Schiller wanted to call "only Ideas" – Schiller claimed Goethe could only have produced the thought of "all as leaf" through his own creative efforts, but Goethe took this to be something experience had shown him to be at work in nature. Further reflection on his difficulties with Schiller were surely at work in his reflections on the intuitive understanding, discussed earlier in this chapter: Goethe thought that he had an inkling of how to show where the limitations Kant put on natural inquiry were released and issued into the grasping of nature's Ideas.

But, sadly, the 1790s are also the last period during which Goethe wrote seriously on botany.[128] After the publication of his Metamorphosis of Plants, Goethe found that his work did not receive the reception he had hoped for, and Goethe took this very personally: "No one could understand the serious passion with which I pursued this business; no one perceived how it came from the depths of my inmost being." Richards quotes this diary entry from 1792, and adds in a footnote that "Goethe relates that his friends [...] found his botanical work unconvincing but that they at least found novelty in some experiments with color that he performed for them." (Richards 441, FN 90)

It was at this time, after his publication of the Metamorphosis, that Goethe began to experiment with prisms. His first two *Contributions to Optics* were published in spring of 1791 and 1792; it was this optical project that led to the problem pointed out by Lichtenberg, discussed earlier. Revisions and extensions of his optical work led ultimately to the publication of the

[128]There is a parallel sad story to be told about Goethe's work in osteology; for this see (Richards 440-457).

lengthy *Farbenlehre* of 1810. Goethe would eventually publish a revised version of his *Metamorphosis* with some other essays on morphological topics, but no systematic study of any botanical subject-matter was able to distract his attention from the color-theory that has come, for better or for worse, to be known as his main legacy as a practicing scientist.

XII. Conclusion

Now that my account of the development of Goethe's botany has been concluded, we can return to the problems motivating Goethe's *Experiment* essay, to look at them in light of his botanical success. To reiterate, the problems of this essay could all be seen as manifestations of the desire of the natural inquirer to become a "neutral, seemingly godlike being".

The first way this desire showed itself was that I must make it so that the fact that I carried out an experiment, as opposed to Tom, Dick, or Harry carrying it out, makes no difference to the result of the experiment. In this fashion, the desire to become neutral and godlike is all to the good; Goethe's efforts in his Metamorphosis essay to make clear how others might follow him, and the history of morphology since his time, show that this desire that I should, in inquiry, act as an anonymous member of the single community of rational inquirers bears good fruit.

The second way the desire for neutrality showed itself was that I can confuse my all-too-human preferences with what there is reason to put credence in, and cling to a pet theory simply because it is my own. This is a real danger, and it can be seen at work in the history of Goethe's optics which Förster recounted: Goethe confused his own views of color with nature's own Truth, and so overestimated what he had accomplished in that field. But it is hard to see a similar ill fate at work in Goethe's botany; his claims in plant morphology, unlike his optical views, are

strikingly modest, and have largely aged well. There is nothing in his botanical writings to rival the notorious anti-Newtonian polemics which populate Goethe's optical works.

The third way the desire to become a "neutral, seemingly godlike being" showed itself in Goethe's *Experiment* essay was in his desire for extra-human ways of connecting things. It is this aspect of his work that separates Goethe and Hegel, as we will see in my last chapter. Goethe would not have been willing to grant William James that "the trail of the human serpent is over everything" (James 37); Goethe wanted a way to secure an approach to nature which would be safe from human interference. It was this end for which his sequences of connected experiments were designed.

Goethe was self-consciously opposing his practice to Newton's on this point; Nancy Cartwright notes that "Goethe derides Newton for surveying so little evidence" (Cartwright 70). Rather than a Newtonian "*experimentum crucis*", where a single carefully-arranged experiment is appealed to in order to demonstrate a general empirical fact, Goethe advocated the practice of regular, orderly sequences of connected experiments to demonstrate the truths of science. What Goethe had in mind here comes out most clearly when his prismatic operations are looked at alongside Newton's: Newton describes careful artificial set-ups, such as the famous experiment where light is filtered through a pair of prisms onto a backdrop after being let into a dark room through a pinhole; Goethe describes simple operations, such as looking at a window-frame through a prism held to one's eye, conocatenated in lengthy sequences (see Förster 2012 265-71 for a description of these operations). Goethe thought that his sequences of experiments should lead to an "experience of a higher kind" unavailable to a Newtonian practicioner, and that repeating these sorts of carefully sequenced experiments was both a neccessary and sufficient

condition for properly doing science.

That there is something erroneous in Goethe here is clear just from looking at Goethe's practice in botany. Though Goethe does advocate the careful and extended observation of flowering plants as necessary to the study of his subject-matter in the Metamorphosis of Plants, as is required in any empirical science, he does not in botany describe anything like the sequenced experiments he advocated in optics, and alluded to in the *Experiment* essay. In fact, his most lasting general insight, that the members of flowering plants are homologous to one another and should be grasped as orderly variations on a common plan, is something he was able to convey to Schiller with "a few characteristic strokes of the pen" (GSS 19). This is also the way that Förster conveyed Goethe's leaf-Idea, and how I have done it above, through a brief sketch (see section X).

Goethe certainly studied plant-life extensively and with great care before finding his *Urpflanze*; as Dorothea Kuhn notes, "Linne's *Fundamenta Botanica* was among the few books which Goethe took with him to Italy." (Kuhn 309) But these studies did not have the kind of careful arrangement Goethe describes in his *Experiment* essay; Goethe made his observations not by observing all possible plants in a sequence, but by working and reworking his ideas until he struck upon a profitable line of thought:

> Already while crossing the Brenner pass he contemplated the creating of the world and drafted a model of the earth and the atmosphere as a pulsating, oscillating whole, into which he gradually integrated descriptions of clouds, mountains, plants, animals, and men. However, it did not develop into a clearly defined concept. He observed especially the changeability of the species in the alpine and maritime environments, and in the luxuriousness and multiplicity of the southern flora he searched for his *Urpflanze* (primal

plant). (Kuhn 312)

There is also no historical record of Goethe having arranged for the orderly study of plants in the gardens of Palermo specifically, where he ultimately grasped that "all is leaf"; he was simply suddenly struck with an insight while reflecting on them at his leisure, with a copy of Homer at his side. What Goethe found was not something that requires carefully arranged sequences of experiments to grasp, as he thought he had shown was generally true of science in his optical writings and his *Experiment* essay, but a way of viewing flowering plants which revealed an intriguing and fruitful generality in their structures. Some deep acquaintance with flowering plants is needed to recognize what Goethe had in mind here, and the significance of this insight becomes clear only when it is applied to novel plant-phenomena, but in the order of discovery of Goethe's botany there is simply not the kind of organization Goethe held was necessary in his *Experiment* essay if the gap between subjective concepts and objective essences was to be overcome.

Goethe did organize botanical gardens in Jena to be planted in accordance with his views; the thought that "all is leaf" does naturally led on to particular ways of continuing the empirical study of flowering plants.[129] I do not deny the relevance of continuous experimentation to Goethe's botany, but only the close link Goethe (and Förster following him) made between *sequences* of experiments and grasping of Ideas. The truth of Goethe's thinking on these matters shows itself in the fact that he was able to convey his thoughts to Schiller with "a few characteristic strokes of the pen": what he had stumbled upon with his Idea was not a special,

[129] See (Förster 2012 261) and (Richards 413) on these gardens, which Hegel helped to tend.

rare type of insight available only to nature's privileged few, but a special instance of a logically distinctive type of thought which is really universal among mankind, once one has an eye to look for it. What Goethe grasped with his homology insights was a general truth about the holistic, organic, structures of plant members: in general, grasping a living member can be done only by grasping it as a member of the whole organism. Goethe had noticed the further, empirical, fact that the members of flowering plants are homologous to one another, and are profitably viewed as all more or less what one sees most immediately in a normal leaf. This is a general fact about nature which is not a function of the interactions of material parcels in accordance with Newton-style laws; viewing plants as mere material aggregates will keep one from recognizing homologies, as homologies can come into view only when one first has organisms as wholes in view.

Goethe recognized that in his inquiries into nature he employed a kind of thinking Kant denied us; but he missed the true significance of this: that sometimes different empirical phenomena call for logically different kinds of thoughts, demand different kinds of judgements to bring them into view. There was a grain of truth in Goethe's belief that he viewed nature differently than Newton did: Goethe viewed nature organically while Newton viewed it mechanically. But as the Newtonian way of viewing things is prone to over-extension, as it is in Kant's approach to organic nature, so is the Goethean way of viewing things prone to over-extension, as it is in Goethe's endeavors in optics. Though Goethe provided much that is of historical interest for philosophy, when it came to the topic of intuitive intellection, Goethe saw only through a glass, darkly.

Chapter Five: Something About Schelling

I. Schelling's Place in the Twenty-Five Years of Philosophy

In any account of German Idealism and the philosophy of nature, as Förster is aware, something must be said about the role played by Schelling. This is especially true for my account, as Hegel's philosophy of nature has so often been conflated with Schelling's. So I will begin this chapter by discussing what Schelling's positive contribution amounts to, if what we are concerned with is German Idealist philosophy of organic nature, what is later called the philosophy of biology. *Contra* Anton Kabeshkin's recent paper, this positive contribution is, in my view, very slight. The remainder of this chapter will thus be dedicated to showing how much there is on the "intuitive understanding" in Hegel's early work, up through the Phenomenology of Spirit of 1807, that is really novel with Hegel and developed independently of Schelling – but not independently of Kant, to whom Hegel was directly replying. This will serve to introduce, in my final chapter, the presentation of the "Organics" in Hegel's Philosophy of Nature as manifesting the productive use of intuitive intellection in inquiry, in contrast to Kant's model of inquiry by means of merely discursive intellection.

Förster champions Goethe as of great importance for the twenty-five years of philosophy; on the cover of the English translation of his book, a portrait of Goethe appears alongside those of Kant, Fichte, and Hegel. This sequence is remarkable for anyone familiar with standard histories of the period (including Hegel's own history of it). There is usually a figure positioned between Fichte and Hegel as of similar importance to them, but it is not Goethe: It is Schelling. Förster does not entirely ignore Schelling in his book, but he downplays his significance:

I think that Schelling was right when, following section 76 of the *Critique of the Power of*

> *Judgement* and Fichte's *Foundations*, he infers that, in principle, nature must in its essence be no less accessible to cognition than the I and that a philosophy of nature, understood thus, is a *desideratum* [parallel to what Fichte did with knowledge of the 'I' in his *Wissenschaftslehre*]. [...] His methodology, however, is wholly insufficient. [...] Let us now consider how Goethe's philosophy of nature deals with this problem. (Förster 2012 249)

– and immediately following this is Förster's chapter on "The Methodology of the Intuitive Understanding"; Schelling's philosophy of nature is not returned to in the book. In a related essay, Förster claims that with Goethe "we have distinguished what an idealistic philosophy of nature is. Or in other words: we have grasped the *Idea* of such a philosophy of nature (Förster 2014 47, emphasis in original, my translation). I think Förster is broadly justified when sidelining Schelling in this manner: Schelling's importance for post-Kantian philosophy has been widely exaggerated, in part because Schelling lived long enough to write his own history of the period, after Hegel was long-dead. But Förster's own student, Anton Kabeshkin, thinks more can be said in favor of Schelling than Förster allows in The Twenty-Five Years, especially if our interest is in the philosophy of biology. For a charitable reading of Schelling as a philosopher of biology, it is helpful to look closely at Kabeshkin's recent article "Schelling on Understanding Organisms" (Kabeshkin 2017).

II. Kabeshkin on Schelling on Understanding Organisms

Schelling's writings on *Naturphilosophie* are interesting, and it is surely true that Hegel learned things from his friendship with Schelling. But as I read him, Schelling remained too close to Kant when thinking about living nature; he is consistently bothered by the puzzle of how to "fit" organic beings into a broadly Newtonian world of forces. Kabeshkin articulates Schelling's views as responding to contemporary disputes between a reductionist "physiological

materialism" and "vitalism". (Kabeshkin 5) Schelling's strategy to resolve these disputes is, as Kabeshkin puts it, "to account for organic phenomena [...] by developing concepts appropriate only at the level of organisms." (Kabeshkin 8) The core of these disputes is similar to a problem we saw bothering Kant in chapter two: according to "physiological materialism", in agreement with Kant's account of material bodies in his Metaphysical Foundations of Natural Science, all changes in bodies are due to external causes. But according to "vitalists" living beings cause themselves to act; they are "cause and effect of themselves" as Kant put it in the third Critique. This is the puzzle that Schelling claims to solve: how can living or "self-moving" bodies occur in a nature in which everything is moved by something outside of it?

As with Hegel, Schelling's immediate solution to this puzzle is to emphasize "the relationship between organisms and their environment" (Kabeshkin 8). This much makes Schelling sound like the Hegel I articulated and defended in chapters two and three. But the way in which Schelling tries to draw distinctions between "organism and environment" is too insensitive to the *qualitative* differences between different kinds of living beings; Schelling neglects the moment of Hegel's "genus-process" when thinking about life because of his focus on finding a way to "fit" living beings into his world of mathematized forces. For Schelling "organisms are fundamentally constituted by determinate proportions of organic forces" (Kabeshkin 14), but quantitative differences between relative proportions are not the right sort of differences to capture qualitative distinctions of plant or animal species.

Schelling's "organic forces" are not *sui generis*, but are simply redescriptions of the more basic phsyico-chemical forces active everywhere in Schelling's nature; Schelling is proud that he "avoids admitting new forces or drives into his ontology" (Kabeshkin 19). What distinguishes the

forces which constitute the life of a living body from the lifeless activities of a merely chemical process is that "while chemical processes are not self-sustaining, organic processes are." (Kabeshkin 14) The way Schelling thinks of this distinction is made clear by an example Kabeshkin quotes on page 16:

> At each moment the organic system establishes an antagonism against every external effect that holds the former in equilibrium. (For example, the living body retains its proper degree of temperature in the highest temperatures, not because the universal law of the communication of heat is *cancelled* with respect to it (this is impossible), but because it maintains equilibrium with the forces impinging from outside through opposed operations – (e.g., by increasing the capacity of the fluids circulating in it, by accelerating processes that absorb much heat.) (Quoting Schelling 2004 63)

Kabeshkin helpfully explicates what he takes to be Schelling's point here:

> The essential difference is that the organism is capable of counteracting external influences by its activity which negates the effects of those influences, as when the body of a warm-blooded animal regulates its temperature through metabolic chemical reactions or muscle contractions, By contrast, for inanimate objects the result is determined by their relatively static structure. (Kabeshkin 16).

This is then what "the relationship between organism and environment" amounts to, for Schelling: an organism is "a special kind of organization and coordinated activity of organs" (Kabeshkin 10 FN21) such that external forces impinging on it do not destroy its organization, but are parlayed into a way for the organism to sustain the particular proportion of forces which constitute it. In inorganic bodies this parlaying does not take place. This is how Schelling solves the dispute between the "physiological materialists" and the "vitalists":

> according to physiological materialism organic activity is completely determined by receptivity, that is to say, everything that happens to the organism is completely determined by external causes. By contrast, according to vitalism, everything that happens

> to the organism, including the organism's reactions to external influences, is completely determined from within the organism (namely, by the vital force which is peculiar to living organisms and is operating inside them). We can now see how Schelling's own theory captures what he takes to be valuable insights of each theory. We have seen that *what* happens to the organism can only be explained by reference to the factors internal to it, but the *occasions* for organic activity are provided by external influences. (Kabeshkin 19)

It is not entirely clear why organic bodies are different from inorganic bodies on Schelling's account; even in inorganic bodies, the effects of an external force depend on the nature of the body acted upon – a fragile vase shatters at a blow that recoils off of an elastic ball, and my apartment can regulate its temperature (via a thermostat). But Kabeshkin is explicit (*contra* Iain Grant's panvitalist reading of Schelling) that Schelling "explicitly makes and accounts for" a "distinction between living and non-living entities" (Kabeshkin 8).

It is supposed to be the peculiar constitution of forces which combine in a living body that make it special for Schelling; as he puts it "organization and life express nothing persisting by itself, but rather only a determinate *form* of being, a totality of multiple causes working together" (Schelling 1809 IV.7, quoted at Kabeshkin 14). What these causes *are* is explicable without using concepts peculiar to thoughts of living beings as living; they are simply forces of the sort that Schelling and Kant see operative everywhere in nature. Schelling sees living beings as just a special case of a natural body where the forces which constitute it act in concert so as to produce a relatively homeostatic pattern in a certain region of space.

But something noteworthy about Schelling's writings on the organic in his *Naturphilosophie* in general shows itself in the texts Kabeshkin draws on: we are working at a very high level of abstraction, and examples of any particular kind of living being rarely figure

into Schelling's analysis. This is because of Schelling's neglect of the genus-process: his account does not make room for the fact noted by Michael Thompson in Life and Action that we can only speak of living individuals and their vital activites by (at least implicitly) bringing these individuals under concepts of general kinds; it is because of the different kinds of living beings they are that mitosis is reproduction for an amoeba but mere growth for a daffodil. (Thompson 2008 55) The types of activities different kinds of living beings can perform are not determined by a merely quantitative difference between the proportions of forces which constitute them,[130] but by the *qualitative* differences we observe between different kinds of living beings. Schelling's account privileges the continuity between inorganic and organic nature in treating the latter as a composition of forces; the same overemphasis on the continuity between beings which enabled the Cartesian mathematization of nature prevents Schelling from providing a satisfying account of the logic of living beings, what is peculiar to thinking of living beings as living. Schelling's *Naturphilosophie* is not defensible on its own terms, for in failing to jettison the early modern fetishization of quantitative science it merely constructed a formalistic account of nature's forces.

But Schelling was a proteus; I do find an interesting way of arguing against Kant at work in one place in his corpus. It is to this isolated section, the first Introduction to his Ideas for a Philosophy of Nature, that I now turn, before returning Hegel to the limelight.[131]

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[130]Schelling was surely influenced on this point by Spinoza's Cartesian account of bodies as "distinguished from one another only by motion-and-rest and speed of movement" (Spinoza 75, EIIP13S2).

[131]Frederick Beiser drew attention to this Introduction and its continuity with Hegel's work in (Beiser 2006), but he did not provide any real analysis of Schelling's or Hegel's

In the Introduction to the first edition of Ideas for a Philosophy of Nature[132] Schelling presents powerful arguments against a Kantian view of our knowledge of organic nature. The strength of his arguments is easy to miss because of the way in which Schelling presents them. As with everywhere else in his work, Schelling in Ideas writes proleptically, constantly offering promissory notes about what philosophy will become or must achieve, implicitly as a direct result of whichever work Schelling is currently composing. This hubristic framing makes it very tempting to (mistakenly) dismiss Schelling as a mere dogmatist, trying to posit grand results for philosophy without the honest toil of actually reaching them.

The baroque manner in which every work of Schelling's presents itself as the highest achievement of the human spirit is German Idealism at its worst. The most egregious elements in Schelling are always the results he sees just over the horizon, but cannot yet reach; Schelling loves to go on about what it will be like once we get there, after the system is complete and all of the details have been filled in by somebody with more time. But we can better appreciate what is genuinely of value in Schelling's thought by bracketing out these fantasized results, and focusing on what he can tell us about where we are now, and what he thinks is wrong with being here; Schelling's strengths are not as a dogmatic but as a critical philosopher, though he tried to be both and especially yearned to be the former. Schelling desperately wants to lead his readers into the promised land; but as with Moses, he will never get there, and we need to keep that fact in mind when we read him. Schelling is useful to us only as a fellow wanderer in the desert; he may

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arguments.

[132]Published in 1793; cited as "IPN". Schelling revised this work by adding lengthy supplements to each chapter in 1802; for reasons I will detail later, only the first edition is of interest for my purposes.

help us to see why we need to move on, but he cannot take us into the promised land.

III. The "Dogmatist" in Schelling's Ideas Introduction

Less poetically: before he begins his wild constructive project in the body of the Ideas, Schelling tries to clear a spot to build on in the book's Introduction. The main obstacle Schelling sees to his project he calls *dogmatism*. Schelling first introduces the figure of the "dogmatist" by announcing that he has been defeated, without telling us who he is or how the defeat has happened; we can get in view who the dogmatist is supposed to be only by working out how Schelling thinks he has been defeated. Working out who this dogmatist is, and what Schelling thinks has gone wrong with them, constitutes my interest in this section.

As a summary before wading into Schelling's text: I think Schelling's "dogmatist" is a strict Kantian. The final defeat of "dogmatism" in philosophy is supposed to follow from an internal critique of Kantianism, presumably because Schelling thinks that any other kind of dogmatism has already been demolished by Kant. Schelling will use what he takes to be common ground between Kantians and himself to argue that Kantianism is unsatisfactory as a philosophical position, and then take this victory as preliminary grounds for announcing the success of all of his own ambitions. This final move is one I can find no justification for; but the internal grounds he brings out for being unsatisfied with Kantianism are quite interesting. Schelling sees that Kant argued *from* his account of the human faculty of knowledge *to* the conclusion that we should reject a sort of knowledge which seems sometimes to be made available to us in experience. Schelling then asks why we should not reverse this procedure instead, and revise our accounts of the human faculty of knowledge until they agree with what seemed to be given to us in experience: If knowledgeable perception of living nature as living

would require that we be able to think by means of what Kant called "synthetic universals" in addition to "analytic universals", why not credit ourselves with this capacity?

I will now turn to Schelling's text, starting with the first appearance in this work of "dogmatism":

> From now on all dogmatism is overturned from its foundations. We consider the system of our representations, not in its *being*, but in its *becoming*. Philosophy becomes *genetic*; that is, it allows the whole necessary series of our ideas to arise and take its course, as it were, before our eyes. From now on there is no longer any separation between experience and speculation. The system of Nature is at the same time the system of our mind, and only now, once the great synthesis has been accomplished, does our knowledge return to analysis (to *research* and *experiment*). But this system does not yet exist. (IPN 30, emphases in original, translation slightly modified)

In this passage, Schelling tells us that "the system" he wants to consider (of our ideas, of Nature, of our mind) does not yet exist. We are given some clues about what this system will be like: in it there will be "no separation between experience and speculation" and in it we will not consider "the system of our representations in their *being* but in their *becoming*". The dogmatist, by contrast, must take there to be a separation between "experience and speculation"; presumably this speculation which is separate from experience is just the consideration of "our representations in their *being* and not in their *becoming*". We are given a few more hints as to how to understand Schelling by the close of the Preface to the first edition of Ideas:

> It will be apparent from the Introduction that my purpose is not to *apply* philosophy to natural science. I can think of no more pitiful, workaday occupation than such an application of abstract principles to an already existing empirical science. My object, rather, is first to allow natural science itself to *arise* philosophically, and my philosophy is itself nothing else than natural science. (IPN 5, emphasis in original)

Schelling's system of philosophy is to be "nothing else than natural science"; it is not to consist of two separable parts, a "pure" philosophy and an "applied" metaphysics of natural science. Implicitly, this is the position of the dogmatist Schelling takes himself to have defeated. Assembling these hints into a single picture, we can say that Schelling's dogmatist, in the first Introduction to the Ideas[133], takes philosophy to consist in something carried out *prior* to natural science that surveys our representations "in their *being*", i.e., as something fixed and unalterable, and which distinguishes sharply between this purely philosophical project and "experience" as something left to empirical science and an applied metaphysics of natural science. This is a recognizably Kantian "transcendental" project. That this is Schelling's target is confirmed by what he goes on to tell us in the Introduction, when he actually begins to argue against the dogmatist he already promised to have defeated:

> The dogmatist, who assumes everything to be originally *present* outside us (not as *coming to be* and *springing forth from* us) must surely commit himself at least to *this*: that which is *external* to us is also to be explained by *external* causes. He succeeds in doing this, as long as he remains within the nexus of cause and effect [....] As soon as he raises himself above the individual phenomenon, his whole philosophy is at an end: the limits of mechanism are also the limits of his system. (IPN 30, emphases in original)

The dogmatist, as a good Kantian, affirms that all objects of our knowledge are "originally present outside us" and do not "spring forth from us"; this is why there is something external to philosophical speculation, an experience to which pure philosophy can apply itself. Without this

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[133]In contrast to the "dogmatism" Schelling discusses elsewhere; I think it is often misleading to use one text of Schelling's to interpret another, given how rapidly he changed his views. In this dissertation I will leave open the question of what the "dogmatism" of the Ideas Introduction has to do with, e.g., the earlier *Letters on Dogmatism and Criticism*. As I will show, I think the Introduction itself provides enough information to tell who Schelling has in view *here*.

external experience, philosophical speculation would be idle, lacking any objects.[134] Schelling's dogmatist also affirms that the limits of "mechanism" and individual phenomena are the limits of our knowledge; our knowledge begins with experience, and ends at knowledge of laws which govern the nexus of cause and effect, where an event comes to be because of a cause external to it. This is all just as Kant's philosophy of natural science would have it.[135]

But, as we have seen, the picture of nature as a realm of objects governed solely by mechanical laws presents a problem for Kant; experience seems to present us with objects which demand we understand them differently than in the way epitomized in Netwonian physics. Without ever mentioning Kant or citing the third Critique, Schelling goes on to rehearse several of the lines of thought Kant laid out in that work. I will quote Schelling at length here, so it can be seen how much there is in his account which is taken from Kant, though he is never once mentioned by name; Schelling alters Kant mainly in changing some examples and muddying his prose, with all of the conceptual work being just as we saw it laid out in my second chapter:

> But now mechanism alone is far from being what constitutes Nature. For as soon as we enter the realm of *organic nature*, all mechanical linkage of cause and effect cease for us. [...] The organic, however, produces *itself*, arises *out of itself*; every single plant is the product only of an individual *of its own kind*, and so every single organism endlessly progresses *forward*, but is forever turning back always into *itself*. Accordingly, an

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[134]This is one of the main theses of the first Critique. For a representative statement of the thesis, consider the following: "Our knowledge springs from two fundamental sources of the mind; the first is the capacity of receiving representations (receptivity for impressions), the second is the power of knowing an object through these representations (spontaneity of concepts)." (A50/B74)

[135]See especially (MFNS 251, 4:543), where Kant argues that all events have *external* causes.

> organization as such is neither *cause* nor *effect* of anything outside it, and so is nothing that intrudes into the nexus of mechanism.
>
> Every organic product carries the reason of its existence in *itself*, for it is cause and effect of itself. No single part could *arise* except in this whole, and this whole itself consists only in the *interaction* of the parts.

An organism is cause and effect of itself; it reproduces its own species; these are lessons from the third Critique.

> In every other object the parts are *arbitrary*; they exist only insofar as I *divide*. Only in organized beings are they *real*: they exist without my participation, because there is an *objective* relationship between them and the whole, there is *concept*. But this concept dwells in the *organization itself*, and so can by no means be separated from it; it *organizes itself*, and it is not simply, say, a work of art whose concept is to be found *outside* it in the understanding of the artist. Not only its form but its *existence* is purposive. It could not organize itself without already being organized. The plant nourishes itself and subsists through assimilation of external matter, but it can assimilate nothing to itself unless it is already organized. The maintenance of the living body depends on respiration. The vital air it inhales is decomposed by its organs in order to flow through the nerves as electric fluid. But to make this process possible, organization must already have been present, which yet, on the other hand, does not survive without this process. Thus organization constructs itself only out of organization. In the organic product, for this very reason, form and matter are inseperable; this particular matter could only arise and come to be along with this particular form, and *vice versa*. Every organization is therefore a *whole*; *its unity lies in itself*; it does not depend on our choice whether we think of it as one or as many. [...]

An organism maintains itself by assimilating its environment to itself in a way that presupposes the existence of the whole organism; its parts are possible only because of the whole, which itself is made possible by the activity of its parts; the purposiveness of an organism is unlike the purposiveness of an artifact; the parts of an organism are combined non-arbitrarily, unlike merely aggregative wholes that I can compose or decompose as I please; all of this should be familiar by

now as teachings of the third Critique.

> So if the purposiveness of the organic product is to be explained, the dogmatist finds himself completely deserted by his system. Here it no longer avails us to separate concept and object, form and matter, as it pleases us. For *here*, at least, both are originally and necessarily united, not in our representation, but in the *object* itself. I should like one of those who take playing with concepts for philosophy, and fantasies of things for real things, to venture with us into *this* fold. (IPN 30-31, emphases in original, translation very slightly modified)

An organism is not matter which has had a form externally imposed upon it, but forms itself; its parts are organs, not "arbitrary" parts aggregated together. As Kant was well aware, here his system "completely deserts him": he takes organisms to be ultimately inexplicable, given the way our epistemic faculties are constituted.

But, unlike Kant, Schelling thinks we can see that this situation is *deeply* unsatisfactory; where Kant merely stops at denying us knowledge, Schelling thinks we have reasons to go further and to reject the picture of knowledge which has lead us to this point. Midway through this long passage, Schelling remarks that "a *concept* lies at the base of every organization" and that this concept must not be "outside" of the object (as in an artifact) but "dwells in the organization itself"; this is best read as a recapitulation of Kant's claims from §77 of the third Critique, that the kind of organization experience presents us with in living nature is conceivable by us only in terms of a certain kind of conception by means of synthetic universals, a kind of conception Kant says we cannot actually credit ourselves with.

Schelling will use the dogmatist's notion of "a concept lying at the base of every [organic] organization" to undermine Kant's strict demarcation between a pure, "speculative", philosophy which can survey our representations as fixed "in their being" and an applied,

empirical, natural science that is outside of what philosophy deals with and in which all is flux. This merely empirical domain, which is for the Kantian outside of what philosophy properly deals with, presents itself to thought as constraining our empirical knowledge, but not our pure knowledge; philosophy, for the Kantian, retains for itself a realm of pure concepts and forms of intuition which it can lay out for inspection without ever being at risk of empirical challenge. What it is to think, for the Kantian, can be articulated *a priori*; experience presents us only with new objects to think about, not with reasons to revise our notions about what thinking itself comes to. So for the Kantian, Schelling's "dogmatist", we must be able to make sense of this notion of "a concept lying at the basis of organic organization" within the strictures Kant laid out: we need to be able to make sense of being in the situation Kant describes in §77 of the third Critique, of experience presenting us with an object that could only be known by an intelligence which is not our own. Schelling's task is to deconstruct this apparent situation Kant presented us with, and show it is not the situation we face.

IV. Schelling as Critic of Kant

Schelling at first states that what organizes an organic being is what the dogmatist calls a concept; this is strictly stronger than what Kant himself allowed, which was only that we have no other way of conceiving of the organization of an organic being than as having been produced as the creation of an intuitive intellect. But Schelling only needs the weaker, authentically Kantian, claim: When he continues his argument, he says to the dogmatist "the first thing that you grant is this: Any conception of purpose can arise only in an intelligence, and *only in relation to such an intelligence can anything be called purposive*." (IPN 32, my emphasis) In speaking of something in nature as internally purposive, we must have reference to an intellect; this is just what is

claimed in §77 of the third Critique when Kant claims the concept of a natural end is possible for us only because we can think of an intuitive intellect as knowing a whole as a whole prior to knowledge of its parts. Without referring to what this merely thinkable other kind of intellect might know, Kant does not think we can make sense of our problematic concept of a natural end, since we cannot ourselves ever have knowledge of a whole before first knowing its parts and then combining them together, and so cannot think of "knowledge of a whole as a whole" without representing this knowledge as thought by an alien form of understanding.[136]

But Schelling notes that his dogmatist also grants more than this: just as Kant affirms that we can make no sense of a natural end without relating this notion to a merely thinkable other kind of intellect, he also affirms that this notion is *empirical*, and that we cannot simply disregard all organic notions in our investigations of nature because experience has presented us with living objects. As Schelling puts it:

> At the same time, you are no less compelled to concede that the purposiveness of natural products dwells *in themselves*, that it is *objective* and *real*, hence that it belongs, not to your *arbitrary*, but to your *necessary* representations. For you can very easily distinguish what is arbitrary and what is necessary in the conjunction of your concepts [i.e., when you judge, judgement traditionally being a "combination of concepts"]. Whenever you conjoin things which are separated in space in a *single* aggregate, you act quite freely; the unity which you bestow on them you transfer to them simply from your thoughts; there is no reason residing in the *things themselves* which required you to think of them as one. But when you think of each plant as an individual, in which everything concurs together

[136] As an analogy, this same cluster of issues arises in what James Conant refers to as "logical aliens". Conant argues that we cannot make sense of the idea of beings whose minds operate by a "different logic", because we can make no space between the notion of their being minded and that of their being logical in the only "way" we are familiar with: so the thought that there is a distinctive "way" our logic works proves to be empty. See (Conant 1992).

> for one purpose, you must seek the reason for that in the *thing outside you*: you feel yourself constrained in your judgement; you must therefore confess that the unity with which you think it is not merely *logical* (in your thoughts) but *real* (actually outside you). It is now incumbent upon you to answer the question, how it happens that an idea, which obviously exists merely in you, and can have reality only in relation to yourself, must yet be actually intuited and represented by you, as itself outside you. (IPN 32, emphases in original)

Schelling begins this passage by stating the conclusion he will force the dogmatist to accept: that the special kind of unity characteristic of organic nature is not merely something *we* find ourselves having to deal with as a peculiar feature of human thought, but is rooted in the objects of experience themselves. This is what it means to say that organic unity is "objective and real" for Schelling: the kind of unity organic beings have is not something we can wish away while keeping those objects in view, as we can wish away the unity of a mere aggregate while keeping all of its parts in view. What belongs to my *arbitrary* representations is what I can think as I please; thus whether I conceive of the three books from chapter four as one pile, or as two piles on top of each other, or in any other manner is up to me. I don't *have* to unite them in any particular way; I can even think about them only separately, never relating them to one another in my thoughts. The books are given to me by experience; any particular grouping I attribute to them is something I add to what experience gives me, as a way of articulating what it is I have been given. I don't even *have* to think of them as books; I can characterize them in other terms if I want to. But that I have been given *something* is not an "arbitrary" representation on my part. I can think of the books as *a pile* or as *kindling* or as *great works of the human spirit*, but I cannot think of them as *nothing at all* or as *non-entities*. The existence of objects outside of me is a necessary representation in my thinking; if I deny that there is *something* on my desk, I know I

must be, am *necessarily*, wrong. My thinking is normatively constrained by experience; this is what makes it intelligible as thought *of* anything at all.

But the way in which my thinking finds itself constrained by experience when experience presents me with a living being is special: when experience presents me with an organically unified being, I feel constrained to see it as *a* whole; I can have the pile of books in view before attributing any unity to them, but this is not how I find myself when I notice a cat or a bush. I *have to* view the cat as a living whole if I am to see its tail as a tail, or its movement as the chasing of a laser beam; in this sense my representation of the whole cat is a *necessary* representation, though it is an *empirical* one: I know I would be wrong if I denied that I saw an organic whole – this is a way I *must* represent it. I still have some liberty in my conceptions here: I can view the cat as a *mammal* or as an *animal* or as *my little furry friend*; but all of these ways of conceiving of the cat have the same kind of holistic features characteristic of the concept "cat": they are all conceptions of sorts of wholes which make their parts possible, and cannot be reduced to logically non-organic concepts which are applied to objects given to me without any necessary unity to them. I know that experience sometimes presents me with objects that distinguish themselves from "ordinary" objects by demanding a special kind of understanding from me; this phenomenon is why Kant had to write his "Critique of Teleological Judgement".

This is the puzzle Schelling presents his dogmatic Kantian with: how can there be an empirically unified whole which constrains my thinking to grasp it only as a whole prior to grasping its parts, if the concept of a whole which makes its parts possible is merely problematic and may (for all we can ever know) lack any true application to objects? How can it be possible that we *must* use these sorts of concepts to study living nature, if we cannot know them to ever be

true of anything in it?

Schelling anticipates one rejoinder to this, which he takes to be tempting to the Kantian but utterly hopeless philosophically:

> Certainly there are philosophers who have *one* universal answer to all these questions, which they repeat at every opportunity and cannot repeat enough. That which is form in the things, they say, we initially impose on the things. But I have long sought to know just how you could first be acquainted with what the things are, without the form which you first impose on them, or what the form is, without the things on which you impose it. You would have to concede that, *here* at least [in the case of experience of a natural end], the form is utterly inseparable from the matter, and the concept from the object. Or, if it rests with your choice whether or not to impose the idea of purposiveness on things outside you, how does it come about that you impose this idea only on *certain* things, and not on *all*, that further, in this representing of purposeful products, you feel yourself in no way *free*, but absolutely constrained? You could give no other reason for either than that this purposive form just belongs to certain *things* outside you, originally and without assistance from your choice.
>
> This granted, what was valid before is also valid here: The form and matter of these things could never be separated; both could come into being only together and reciprocally, each through the other. [...] All previous systems must be judged according to this principle. (IPN 33, emphases in original)

Here Schelling makes a powerful objection to any Kantian attempt to attribute all "form" in experience to *us* as opposed to *objects*; in general this notion is incoherent, an instance of what Donald Davidson called the "dualism of conceptual scheme and empirical content" (Davidson 1984 189). But in particular, there is a problem with the idea that *internal purposiveness* might be merely a form we impose on objects: we find ourselves normatively *constrained* to "impose" this form only on some objects, not others. Given experience as we find it, there are beings which

we must judge as if they were wholes which make their parts possible if we are to think of them at all, such as trees, and other beings where we do not need to judge in this way to think about them, such as piles of rocks. We know this much about ourselves, as inquirers: we do not feel free to simply claim that all of nature is simple objects arranged by chance. If we do want to claim this, we know we will have to argue the case; experience seems to present counterexamples to this way of considering it, where nature has rather arranged herself in orderly ways to further certain ends internal to particular natural objects. A vine does not appear to grow as something random, but reproduces more vine out of itself in ways that lead to flourishing growth. Experience seems to present us with discoverable generalities regarding the ways vines grow; we can find regularities more interesting than mere chance if we tend to vines attentively. But there are other aspects of experience which do not present themselves in this way. If I carefully study the stray newspapers and empty soda cans near the dumpster outside my apartment, I will not find any principles governing what happened to get discarded on the ground; what happens to be on the ground is contingent, dependent on what people happened to throw away that week and how well they aimed when tossing things into the dumpster. If I happen to uncover regularities in what trash is laying about, these will be regularities which depend on the activities of my neighbors, not on the nature of the filthy area by this dumpster. Some parts of my experience present themselves as organized in ways that others are not: this distinction cannot be accounted for by any system which tries to handle all organization in experience by reference to the experiencing subject as opposed to the objects experienced.

Kantians should not feel tempted by "impositionist" accounts[137] of the forms of thought; they are hopeless.

There is another route the Kantian dogmatist may find attractive, which Kant himself seems to have thought was somehow necessary for us: nature is purposively organized because of the work of a divine creator of nature, whose work we then appreciate in noticing purposiveness in nature. Schelling's attack on this way of making internal purposiveness intelligible is thorough and scathing:

> In order to comprehend this union of concept and matter, you assume a higher divine intelligence, who designed his creations in ideal forms and brought forth Nature in accordance with these ideals. But a being in whom the concept *precedes* the act, the design the execution, cannot *produce*, but can only form or model, matter already there, can only stamp the impress of the understanding and of purposiveness upon the matter from without. What he produces is purposive, not *in itself*, but only in relation to the understanding of the artificer, not *originally* and *necessarily*, but only contingently. [...] Not that the things of Nature, as such, are purposive, as every work of art is also purposive, but that this purposiveness is something which could not be imparted to them at all from without, that they are purposive originally *from themselves* – this is what we want to see explained. (IPN 33-34, emphases in original)

Schelling immediately reiterates this line of argument, that any such creationism makes internal purposiveness into merely external purposiveness (as it makes natural things into artifacts).

> You therefore take refuge in the *creative* power of a divinity, from which the actual things together with their ideas proceeded and sprang forth. You realized that you had to allow the actual to arise together with the purposive, the purposive together with the actual, if you wished to assume something outside you that is purposive in and through itself.

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[137] As Robert Pippin has dubbed them; see p.210 of (Pippin 1989) for an early statement of the objection, and (Pippin 2013) for a more recent reiteration of it.

> But let us assume for a moment what you allege (although you yourself are in no position to make it intelligible); let us assume it is through the creative power of a divinity that the whole system of Nature arose and with it all the diversity of purposive products external to us. Have we in fact advanced even a single step farther than before, and do we not find ourselves once again at the same point from which we set out at the beginning? How organic products external to, and independent of, me have actually come to be was not at all what I required to know; for how could I even form a clear idea of that for myself? The question was: how the *representation* of purposive products outside me has got *into me*, and how, *although it pertains to things only in relation to my understanding*, I am nevertheless compelled to think of this purposiveness as *actually outside me* and necessary. This question you have not answered. (IPN 34, emphases in original)

Here Schelling partially recapitulates Kant's own discussion of this topic, about why we cannot be satisfied with attempts to understand internal purposiveness as "designed". Schelling's discussion goes further than Kant, however, in holding that this discussion he has taken over from Kant is really *irrelevant* to the philosophical issues at hand. What we need to make sense of is not how, in nature entirely independent of our works of inquiry, a purposive object may have come into being; what we need to make sense of is how, *in our inquiries*, we find internally purposive objects given to us in experience, as real and as independent of our thoughts as tables and rocks are. Even if all purposiveness in nature *was* the result of intelligent design, this would be of no use at all to the problems Kantians face: the trouble is just about how we can be *given in intuition* objects which we can understand only by grasping them as wholes prior to grasping their parts. Apart from how these objects are given to us in intuition, they can be designed by God or form themselves out of chaos or be sheer random nonsense; it makes no difference. It is a basic insight of Kantian epistemology that in inquiry we are concerned with objects insofar as they can be given to us in perception; if we abstract from this condition then we are left with no

relation to any objects at all, and so have no objects to so much as be ignorant of.[138] But given Kant's account of our understanding as merely discursive, always proceeding from knowledge of parts to knowledge of wholes by subsuming given individuals under universals which we form independently of knowing whether individuals fall under them, Kant has no way to make sense of the fact that we are given in intuition wholes which can only be grasped prior to their parts, and that we in fact grasp these wholes as given in intuition. Kant is ultimately forced to deny this fact of experience in his attempts to make sense of it, claiming that here experience, which is the source of all our knowledge of objects, is a source only of the appearance of knowledge of an object – because his account of our faculties of knowledge cannot allow that we might acknowledge what experience presents us with here.

Schelling argues that we should take the Kantian dogmatist's failing here as a reason to reject the project of a pure inspection of our representations "in their being", fixed prior to all experience; instead we should work to make sense of our representations "in their becoming", as we find them actually at work in experience, in the process of empirical inquiry. If we can find a way to articulate an account of our faculties of knowledge that makes possible the knowledge of internally purposive living wholes which experience seems to present us with, this account will

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[138]Whether there can be any objects apart from the way they can be given to us, i.e., apart from space and time as the forms of our intuition, is a perennial issue of dispute between Kant and all of his post-Kantian successors. Kant seems to affirm it, or at least holds we can't know it to be false; Fichte and Schelling and Hegel all deny it, each arguing that the forms of "our" intuition are just the forms of finite objects as such. Settling this question is outside the bounds of this dissertation; for my purposes I only need to note that whether there can be objects independent of our forms of intuition or not, these are of no concern *in inquiry*: for in inquiry we are concerned with what is actually given to us, not with what can never conceivably be given to us. What can never conceivably be given to us is something we can never come to know in inquiry, and so it is no shortcoming if we never claim to know anything of it.

be more satisfying to us than the Kantian one: it will succeed where Kant failed. This, Schelling tells us in the Introduction to his Ideas, is one of the tasks of his book.

V. Schelling's Halting

Sadly, the Ideas itself, as with so much of Schelling's work, promised more than it could provide. In the Preface to the first edition, Schelling had written "The part which follows next will include the principles of the theory of organic nature, or so-called physiology." (IPN 5) The book as published ends with a very short section titled "Concluding Note and Transition to the Following Part" which contains not a hint of what this missing discussion of organics and physiology would have been like. Förster amusingly notes that Goethe "had not originally been impressed by Schelling's *Ideas for a Philosophy of Nature*. The author did not seem to him to be entirely sincere, and the book itself failed to address organic nature. 'Schelling's book has given me occasion to notice once again that we cannot expect much help from contemporary philosophers', he wrote to Schiller on January 13, 1798" (Förster 2012 222, citation omitted).[139]

Schelling's next work, after the Ideas, was his On the World-Soul: A Hypothesis of Higher Physics for Explaining the Universal Organism. As the title suggests, by the time he composed this work his views had changed significantly; he now posits *universal* organicism, even in apparently "dead" matter, to make sense of even such purely physical matters as gravitational attraction and the transmission of light; this is the "higher physics" of the book's title. As the arguments of his which I care about in the Introduction to the first edition of the

[139]On the complications of dating when Goethe and Schelling encountered each other's work, and so to what extent each may have influenced the other, see (Richards 147ff.) and (Nassar 2013 193-195). Significantly for my purposes, Goethe's botanical works and Schelling's Ideas were written entirely independently of one another.

Ideas hinge importantly on the insight that only *some* of what is given in experience appears organically organized, the Schelling of On the World-Soul is of no interest to me, as that Schelling has forgotten this fact. Förster claims that On the World-Soul "dealt with the organic sphere that had been omitted from the *Ideas*" (Förster 2012 222-3), but this is misleading. Though it is true that On the World-Soul does discuss organic nature, it does this only in its second half; the first part of the book is devoted to revising the views Schelling had earlier put into print. As Schelling himself says in a postscript at the end of the first Preface to On the World-Soul, "This work is not to be regarded as a continuation of my Ideas for a Philosophy of Nature." (Schelling 1809 2, my translation) So Schelling did not follow up on his insights from the Introduction to the Ideas either in that book or in his later work; he simply moved on and did something else. Having taken what insights I think there are to be gleaned from Schelling, I will follow in his spirit and discuss something else without a clean transition.

VI. *Differenzschrift*

During the period when he and Schelling were jointly producing the philosophical Critical Journal, Hegel wrote two long essays: *The Difference Between Fichte's and Schelling's System* [sic] *of Philosophy* and *Faith and Knowledge*. I will look in detail at some aspects of these essays to show that even here Hegel clearly distinguished between "intellectual intuition" and "intuitive understanding", and dealt with the latter with a clear reference to KdU §77.

Hegel starts the *Differenzschrift*'s chapter on the "Exposition of Fichte's System" by speaking immediately of intellectual intuition: "The foundations of *Fichte's system* is intellectual intuition, pure thinking of itself, pure self-consciousness, Ego=Ego, I am." (*Differenzschrift* 119) Throughout his discussion, Hegel presupposes some familiarity on the reader's part with Fichte's

claim that the I posits itself through intellectual intuition: “Of course, intellectual intuition is nothing but pure activity, doing, intuiting: it is only present in the pure spontaneity which produces it and which it produces.” (*Differenzschrift* 120-121) To anyone acquainted with Fichte, this is a familiar part of the foundations of his system.[140] Hegel does not let Schelling's (perhaps quite different, as we will see in section IX) sense of “intellectual intuition” guide his exposition of Fichte's system of philosophy; when discussing Fichte, he lets the term have just the precise sense Fichte gave to it.

But what is most interesting for my purposes is a remark Hegel makes in his dense and allusive discussion of Fichte's view of nature:

> By this route, Fichte comes closer than Kant to managing the antithesis of nature and freedom and exhibiting nature as an absolute effect and as dead. In Kant, too, nature is posited as absolutely determined. But it cannot be thought of as determined by what Kant calls understanding, for the variety of particular phenomena are left undetermined by *our human discursive understanding*; so they must be thought of as determined by *another* understanding [i.e., designed by God]. However, this determination by another understanding is to be taken merely as a maxim of our reflecting judgement. Nothing is asserted about the existence of this other understanding. Fichte does not need this detour, this idea of a separate understanding that is other than human, in order to let nature be determined. Nature is determined immediately by and for intelligence. The latter sets absolute limits to itself and this self-limiting cannot be derived from Ego=Ego. It can only be deduced from it: its necessity is to be shown from the deficiency of pure consciousness. (*Differenzschrift*, 143-4, Hegel's emphases)

In this passage, Hegel contrasts Fichte and Kant on how we are to understand the picture of

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[140]On Fichte, see (Förster 2012) chapters eight and nine, especially p.181ff on the intellectual intuition of the I.

nature which they both share, that of nature as a realm absolutely determined by exceptionless laws.[141] For both Kant and Fichte, most of these laws of nature are unknown to us. For Fichte, says Hegel, these unknown laws derive from our I in an inexplicable manner (this inexplicability being one of his main complaints against Fichte in his "Exposition"); Kant is said to have viewed the root of these unknown laws differently. Our "human discursive understanding" is not the source of the manifold of natural laws, on Hegel's reading of Kant; to represent a source for these manifold laws, we must instead represent to ourselves "another understanding" than the human, discursive, one. Though Hegel does not name it as such here, it is clear he has in mind specifically God's *intuitive* understanding as Kant describes it in KdU §76-77.[142] Not only does Hegel not identify this "other understanding", the intuitive understanding, with "intellectual intuition", but he claims that the champion of intellectual intuition (Fichte) has no use for Kant's intuitive intellect! So already in his earliest published writings, when he was working closely with Schelling, Hegel does not use the phrases "intellectual intuition" and "intuitive intellect" interchangeably, but distinguishes them in just the way Förster says all readers of Kant should: intellectual intuition is a species of intuition, of which Fichte's "I=I" is an example, and intuitive intellect is a species of understanding, which is present briefly in Kant's Critique of Judgement but absent in Fichte.

Hegel's account of Schelling's system of philosophy in the *Differenzschrift* also has some

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[141] For Kant's attempts to vindicate this picture, see the "Second Analogy" and the "Third Antinomy" in KRV. In the *Differenzschrift* Hegel argues that Fichte shares this picture with Kant, drawing mainly on Fichte's Foundations of Natural Right for evidence.

[142]Harris and Cerf identify it as such in a footnote to this passage, FN 53 p.143, which refers back to FN 6 p. 81., where §76 is explicitly referenced.

interesting material for my purposes: it contains some of the passages which have Hegel at his closest to Schelling, but the details of his discussion already point towards his improvement on Schelling's views.

In the concluding pages of the section on Schelling's system, Hegel asserts that "Intellectual intuition is the absolute principle of philosophy, the one real ground and firm standpoint in Fichte as well as in Schelling." (*Differenzschrift* 173) But much of what Hegel says about intellectual intuition in this work, and his other Critical Journal essay, *Faith and Knowledge*, is obscure. Hegel follows Schelling in the many grand claims which are made for intellectual intuition, and in claiming that Schelling's system improves on Fichte's in virtue of a special sort of "intellectual intuition" that is only obscurely present in Fichte's system.[143] When discussing Schelling's system of philosophy, Hegel says that what is needed is "the intuition of God's eternal human incarnation, the begetting of the Word from the beginning" (*Differenzschrift* 171); he immediately elaborates that this intuition can be grasped "in art properly speaking... as a work which, being objective, is enduring, but can also be regarded by the intellect as an external dead thing; it is the product of the individual, of the genius, yet it belongs to mankind." (*Differenzschrift* 171)[144] But the aesthetic intuition of a work of genius is also here identified with "a living emotion" (ibid, 172) in religion, and with what "appears in speculation more as begetting itself in its infinite intuition. [...] Both art and speculation are in their essence divine

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[143]The details of how Hegel understood Fichte are outside of the scope of this dissertation; I suspect that part of what motivated Hegel's change of views when writing the Phenomenology was a new appreciation for "*Fichtes Verdienst*", which was greater than Hegel had realized in his Critical Journal period.

[144]This is an allusion to Schelling's views in his System of Transcendental Idealism, which had been published the previous year.

service – both are a living intuition of the absolute life and hence a being at one with it." (ibid) It is hard to even imagine what sort of strange beast might satisfy all of these descriptions.[145]

But something easy to overlook in this section of the *Differenzschrift* is the role Hegel calls on this strange "intellectual intuition" to perform. He claims it is needed only to grasp the *unity* of "The science of the subjective Subject-Object [which] has hitherto been called transcendental philosophy [and the science] of the objective Subject-Object, philosophy of nature." (*Differenzschrift* 161) "Transcendental philosophy" is how Schelling referred to what he took to be correct in Kant's & Fichte's philosophies; "philosophy of nature" was his name for his new science, which paralleled it. Each of these is a science in its own right for Schelling; as Hegel puts it, "the two sciences... stand side by side in equal dignity." (*Differenzschrift* 161) The strange "intellectual intuition" (which is supposed to be indifferently present in genius artwork, religious feeling, and philosophical speculation) is not invoked *within* either of these sciences: Schellingian transcendental philosophy proceeds largely as Fichte conceived of it, and Schellingian "philosophy of nature" aims only to show that "the ideal determinations nature received in [empirical] science are also immanent in it." (*Differenzschrift* 160) "Intellectual intuition" of the sort indifferently present in genius artworks, religious feelings, and philosophical speculations is needed only to establish that transcendental philosophy and

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[145]It is tempting to read this strange hodgepodge version of "intellectual intuition" as just what Hegel has in view in the Phenomenology's famous quip about a "night in which all cows are black" (PhG§16 9), but this is complicated by the fact that already in the *Differenzschrift* Hegel criticizes the "onesidedness" of "*Schwärmerei* [which] holds fast to this intuition of colorless light" (*Differenzschrift* 156) – "colorless light" being as unilluminating of particular bodies as pure darkness. The details of Hegel's rejection of intellectual intuition in the development of his views that take place while writing the Phenomenology and lecturing in Jena are outside the scope of this dissertation; my interest in this period lies in Hegel's remarks on intuitive understanding, which are independent of what he says about intellectual intuition.

Naturphilosophie are united in, and exhaust, "the Absolute": intellectual intuition is needed to establish that "the order and coherence of ideas (the subjective) is the same as the coherence and order of things (the objective)." (*Differenzschrift* 166) How this is supposed to work is something Hegel is silent on in these texts; intellectual intuition is only appealed to as what in fact must do this necessary task – we are not told how it does it, or how we can be certain that it is fact does unite transcendental philosophy with the philosophy of nature and show that these exhaust "the Absolute". "Intellectual intuition" in the Critical Journal works points to a check that Hegel can't cash.

But I want to draw special attention to the fact that Hegel does *not* invoke "intellectual intuition" in this strange sense for anything but this unifying task. His hostility to Schellingian "intellectual intuition" in the Phenomenology and all later writings should thus be understood alongside a *change* in Hegel's understanding of the role of the philosophy of nature in "the system of philosophical sciences": Schellingian philosophy of nature played its role only in a conception of the philosophical sciences that went along with a sort of "intellectual intuition" that Hegel wants nothing to do with by the time he writes the Phenomenology. Though Hegel will retain Schelling's term "*Naturphilosophie*" for the second part of his own system, Hegel's philosophy of nature cannot be Schelling's, for Hegel will reject the strange sort of "intellectual intuition" that was supposed to provide Schelling with the architectonic which made *Naturphilosophie* a necessary part of Schelling's philosophy. The work Hegel's mature Philosophy of Nature is doing thus cannot be that of a Schellingian *Naturphilosophie*, as Hegel does not have the Schellingian archetectonic that Schelling was able to use to motivate *Naturphilosophie*, in his sense: Hegel must have a different way to motivate his own project in

the Philosophy of Nature.

The *Differenzschrift* discussion of Schelling's system of philosophy also contains the seeds of what will become part of Hegel's mature view of the philosophy of nature, for in this section of his essay Hegel has a long aside to discuss what he labels an "example" of what an alterative to Schellingian philosophy of nature might look like: Kant's philosophy of nature. Along with some perceptive but briefly-stated criticisms of Kant's philosophy of physics,[146] Hegel here again alludes to the intuitive intellect of KdU §77:

> Kant acknowledges nature: he posits the object to be something undetermined (by understanding) and he views nature as Subject-Object in that he treats the product of nature as an end of nature, as purposeful without a concept of purpose, as necessary without being mechanistic, as identity of concept and being. But at the same time this view of nature is supposed to be merely teleological, that is to say, it only serves validly as a maxim for our limited human understanding whose thinking is discursive and whose universal concepts do not contain the particular phenomena of nature. This *human* perspective is not supposed to affirm anything concerning the reality of nature [considered as purposive].The perspective remains wholly subjective, therefore, and nature purely objective, something merely thought. The synthesis of nature as determined and yet also not determined by understanding, is supposed to remain a mere Idea in a sensuous understanding; and *for us men* it is quite impossible that explanation in the mechanical mode should ever converge with purposiveness.[...] All the same, [Kant's views] do rise to the *Idea* of a sensuous intellect, and sensuous intellect is Reason.[...but Kant has not] raised the necessary supreme Idea of a sensuous intellect to reality." (*Differenzschrift* 163, emphases in original)

The translators Cerf and Harris claim in a footnote to this passage that Hegel's language of a "*sinnliche Verstand*" in this "curious remark... refers to Kant's discussion of the "intuitive

[146]On this see (Rand 2006)

intellect" in the *Critique of Judgement*, §77." (*Differenzschrift* 163, FN 12) A "sensuous intellect" is not a Kantian faculty; for Kant intuition is sensuous, but intellect is not – it is merely discursive, just as Hegel notes in this passage (cf. KRV A50-1/B74-5, and FN5, above). "Sensuous intellect" is naturally read as an alternative name for a type of intellect with which Kant contrasted the discursive – "sensuous intellect" is a type of what Kant calls "intuitive intellect". A Creator God clearly cannot be said to have a "sensuous intellect", as what senses depends on something outside of itself for knowledge, and a creative intellect cannot be dependent on what it creates for its knowledge of it. By coining the phrase "sensuous intellect" Hegel should thus be read as distinguishing between two different senses of intuitive understanding in the third Critique, just as we have seen Förster did: a creative intuitive understanding that grasps the world as a whole (because the world-whole is its product), and a "sensuous understanding" that grasps wholes as wholes by means of its senses. The "Idea of a sensuous intellect" which Hegel here identifies with "Reason" is just an understanding which can proceed from knowledge of *a* whole to knowledge of *its* parts, which can know parts as parts which depend on the whole – such as a living being's members. "Reason" is according to this passage just what can have genuine knowledge of living beings as living.

Hegel's criticism of Kant on the question of "intuitive understanding" is thus closely tied to his criticism of such Kantian dualisms as that of "understanding" and "reason", of a faculty of concepts/judgements and a faculty of syllogisms, of constitutive and regulative principles in inquiry, of mere "concepts of the understanding" and Ideas as "concepts of reason" (A320/B377). These criticisms ultimately take aim at the "critical" metaphysics Kant wanted to retain and the "transcendent" metaphysics he wanted to reject – and the "theoretical" reason which was limited

to this critical metaphysics and the "practical" reason which had license to have faith in something transcendent. In all of his early writing, and especially in *Faith and Knowledge*, Hegel is eager to get at all of these issues at once, which gives the texts a sometimes frantic (but invigorating) quality; for reasons of explication I want to bracket these issues to focus on Hegel's view of living nature in these texts.[147]

At this stage in his development, for Hegel to say that Kant (almost) grasps nature "as objective Subject-Object" is the highest praise; that is precisely what he argues makes for the superiority of Schelling's system of philosophy to Fichte's in the *Differenzschrift*. In a way that prefigures his more developed discussion in the Science of Logic fifteen years later, Hegel sees the best part of Kant's view of nature in the way he (almost) grasps living beings as "purposeful without a concept of purpose", that is as internally purposive, and how Kant (almost) tells us that recognizing living beings as internally purposive involves the use of non-discursive intellection via Ideas. The mature discussion of the Science of Logic is here only present in a very partial, unsatisfactory manner however; it is possible to find these thoughts at work in Hegel's 1801 work only by seeing it in light of his 1816 work.[148] But already in this early work, the points of

[147] *Faith and Knowledge* in particular has inspired many excellent recent discussions of the Kant-Hegel relationship; see for instance (McDowell 2009, Essay 4) and (Sedgwick 2012). In future work I plan to extend my analysis to some of these other Kantian dualisms, starting with that between mere "concepts of the understanding" and Ideas as "concepts of reason", with a focus on Hegel's defense of the ontological argument against Kantian criticism.

[148] A fuller discussion of Hegel's relationship to Schelling, or of Schelling's own views circa 1801, is outside of the scope of this dissertation. But as a hypothesis, I would venture that Hegel's thinking at this time was stymied by the fact that Schelling had already moved past the views he held while writing the Introduction to his Ideas, and now held that, as Hegel puts it in the *Differenzschrift*, "every speck of dust is an organization." (*Differenzschrift* 157) If Hegel had been convinced by Schelling that all of nature was to be viewed organically, this would color his reading of KdU §77 in such a way as to prevent him from clearly working out the reading he

reference for how Hegel reads this portion of Kant are in view, and the feature of Kant's account of natural teleology which most bothers him is already manifest: Hegel sees Kant as a skeptic, denying us our right to know nature as internally purposive, to actually "affirm anything concerning the reality of nature" as purposive.

VII. The Intuitive Understanding in *Faith and Knowledge*

In *Faith and Knowledge* even more than in the *Differenzschrift* we can see Hegel paying close attention to Kant's scattered remarks about non-discursive forms of understanding, especially §77 of the Critique of Judgement. Many of the remarks on Kant in this essay are very suggestive, and merit elaboration at length; I will only point out a few of them briefly.

Most of the remarks on Kant unsurprisingly occur in the essay's first chapter, titled "Kantian Philosophy". Hegel opens this chapter with a general complaint about Ideas in Kant's writings, that "in cases where an Idea truly does provide the basis, the confused way in which the Idea is expressed makes it difficult to recognize it in the first place [....] when the Kantian philosophy happens upon Ideas in its normal course, it deals with them as mere possibilities of thought and as transcendent concepts lacking all reality and soon drops them again as mere empty thoughts." (GuW 67) This can serve us as a general statement of how Hegel thinks about Ideas in Kant: Ideas, in Hegel's sense, genuinely do show up in Kant's texts, but are not noticed as being Ideas in Hegel's sense of a "unity of concept and objectivity", and Kant does not pay them sufficient attention. This is, as we have already seen in chapter two, precisely how Hegel treats the Idea of Life in his Science of Logic: his exposition largely builds on points Kant had not simply overlooked, but had rather not looked at closely enough or with sufficient attention.

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eventually indicates in the Science of Logic.

Hegel's task, as a philosopher who wishes to rehabilitate Ideas, is then to bring up these moments in Kant and set them in the spotlight for philosophical focus. He does not want us to grasp Ideas which we have simply been ignorant of, but to recognize our familiar ways of thinking as already the thinking of Ideas.

What Hegel praises most from Kant in this essay is that "productive imagination is a truly speculative Idea" (GuW 71). This notion of a "productive imagination", which Kant introduces in the "Transcendental Deduction of the Categories of the Understanding" in the Critique of Pure Reason, is argued by Hegel to in fact be the root of both the categories and the forms of intuition. I here bracket Hegel's arguments, which are only allusively formulated in the text, and present his conclusions: "we must not take the faculty of imagination as the middle term that gets inserted between an existing absolute subject and an absolute existing world. The productive imagination must rather be recognized as what is primary and original, as that out of which subjective ego and objective world first sunder themselves" (GuW 73).[149]

There is for Hegel a single "faculty" behind all of Kant's multiple "faculties", which

[149]On this compare Dewey in "The Reflex Arc Concept in Psychology": "the distinction of sensation and movement as stimulus and response respectively is not a distinction which can be regarded as descriptive of anything which holds of psychical events or existences as such. [...] The reflex arc theory [...] gives us one disjointed part of a process as if it were the whole. It gives us literally an arc, instead of the circuit; and not giving us the circuit of which it is an arc, does not enable us to place, to centre, the arc. This arc, again, falls apart into two separate existences having to be either mechanically or externally adjusted to each other." (Dewey 369-70) The relationship of Dewey's 1896 essay to his education by "Oxford Hegelians", and the inheritance of Hegel's Philosophy of Nature in pragmatism, is a topic I hope to look at in future research. (Pearce 2012) and (Redding 1999) both offer a start at this.

makes Kant's talk of mental "faculties" potentially misleading:[150]

> Productive imagination has been allowed to get by easily in the Kantian philosophy, first because its pure Idea is set forth in a rather mixed-up way like other potencies, almost in the ordinary form of a psychological faculty, though an *a priori* one, and secondly because Kant did not recognize Reason as the only and only *a priori*, whether it be of sensibility, of intellect, or what have you. Instead he conceived of the *a priori* only under formal concepts of universality and necessity. (GuW 73)

This general standpoint provides a perspective from which the near-total absence of "*a priori*"-talk in Hegel's work makes sense: he associates it with a suspicious notion of a "cognitive faculty" that operates like a psychological one, only not. Hegel complains that "Kantian, and more specifically Fichtean philosophy are forever sliding into this psychological idealism" (GuW 76) and it is to avoid this temptation to backslide into psychologism[151] that Hegel thinks we need to revise the basic structures of Kantian-Fichtean philosophy in order to save what is important in them. The familiar Kantian notion of the "*a priori*" as what is universal and necessary in our thinking becomes so altered in Hegel's rethinking of Kant that he will not retain the term in his mature work.

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[150]Hegel blames Locke's influence on Kant's conception of a "critique of the cognitive faculties" (GuW 68) for this mistake on Kant's part, quoting from the introduction to Locke's Enquiry and noting that the way Locke expresses his undertaking "could just as well [be] read in the introduction to Kant's philosophy" (GuW 69). On Lockean remnants in Kant's critical philosophy, with a focus on problems Fichte saw in Kant only during his Berlin period, see (Martin 2003).

[151]I mean this in Frege's sense of a failure to "separate sharply the psychological from the logical, the subjective from the objective" (Frege x). What is properly logical for Hegel was treated of by Kant and Fichte (at least on Hegel's understanding of them) as partly psychological, with the forms of thought which are necessary to grasp objects treated as merely *our* forms of thought – at least some of the time. But the details of Hegel's "subjective idealism" charge against Kant and Fichte is are outside of the scope of this dissertation, and have spawned a large literature.

A full story about the fate of the "*a priori*" in Hegel is outside the scope of this dissertation,[152] but part of the story must be that Hegel does not want to simply replace Kant's doctrine of the human faculties with a rival account of the human faculties: where Kant says that we have a discursive understanding, Hegel does not want to say that *instead* we have an intuitive understanding, but that "our understanding" (which for him is not the name of a psychological faculty, but of a logical capacity, a power of thought) is neither merely discursive nor merely intuitive, but allows for multiple forms of intellection. In contrast, "Kant regards discursive intellect, with this sort of cognition, as in itself and absolute" (GuW 77) and draws conclusions about what is possible for human knowledge from the nature of this absolutely discursive intellect we are said to be *a priori* restricted to. Hegel's first mention of "intuitive intellect" in this essay is in the context of praising the productive imagination and denigrating the "*a priori*": Hegel describes "the still purer Idea of an intellect that is at the same time *a posteriori*, the Idea of an intuitive intellect" and says that "this Idea of an intellect that is *a posteriori* or intuitive hovered very clearly before Kant" but laments that Kant "consciously destroyed it" (GuW 80). This "*a posteriori* intuitive intellect" cannot be the intellect of a Creator God, for whom there can be no reliance on sensibility and so no *a posteriori* knowledge. It must rather be what Hegel has called in the *Differenzschrift* a "sensuous intellect", an intellect which can grasp wholes in experience and proceed to knowledge of their parts, which thinks via "synthetic universals", which has knowledge through Ideas: the sense of intuitive understanding which Förster isolated and championed in his The Twenty-Five Years of Philosophy.

In *Faith and Knowledge*, Hegel calls the Critique of Judgement "the most interesting

[152]For part of this story see (Rand 2006).

point in the Kantian system" (GuW 85). He has few things to say about the first half of this book, however, merely finding Kant's talk of a "harmonious play of cognitive powers" to be suggestive of these powers being derivative from a common root. Far more important than this for Hegel is Kant's

> reflection upon [organic nature] in the 'Critique of Teleological Judgment', [where] Kant expresses the Idea of Reason more definitely than in the preceding concept of a harmonious play of cognitive powers. He expresses it now in the Idea of an intuitive intellect, for which possibility and actuality are one. In an intuitive intellect 'concepts (which *merely* concern the possibility of an object) and sensuous intuitions (which give us something without allowing it to be known as object) equally disappear.' An intuitive intellect would 'not proceed from the universal to the particular and so to the singular (through concepts); and the concordance of the *particular* laws in nature's products with the intellect will not be *contingent* for it.' It is an 'archetypal intellect' for which 'the possibility of the parts, etc., as to their character and integration is dependent on the whole.' (GuW 88-89, emphases in original)

Hegel finds this part of the third Critique important enough to simply quote all of these passages verbatim.

> Kant also recognizes that we are necessarily driven to this Idea. The *Idea* of this archetypal *intuitive intellect* as at bottom nothing else but the *same Idea* of the transcendental imagination we discussed above. For it is intuitive activity, and yet its inner unity is no other than the unity of the intellect itself, the category immersed in extension, and becoming intellect and category only as it separates itself out of extension. Thus transcendental imagination is itself intuitive intellect. The idea occurs here [in KdU] only as a thought. Notwithstanding its admitted necessity, reality must not be predicated of it. On the contrary, we must once for all accept the fact that universal and particular are inevitably and necessarily distinct. 'The intellect is for concepts, sensuous intuition for objects – they are two entirely heterogeneous parts.' The Idea is strictly necessary and it is

> yet problematic. In respect of our cognitive faculty nothing is to be acknowledged save the way it appears in its exercise (as Kant calls it) in which possibility and actuality are distinguished. (GuW 89, citing throughout KdU §76-77, emphases in original)

Hegel clearly had Kant's text open in front of him while writing this; uncharacteristically for Hegel, his quotations here are exact. The "transcendental imagination" which Hegel mentions in this passage was his main topic for the preceding twenty-two pages of his essay; in the remaining eight pages he will attempt to show that, really, all of the aspects of Kant's philosophy he has had in view are the same thing that Kant briefly had in view for two subsections of the third Critique. Hegel is plainly frustrated at how tantalizingly close Kant came to the truth, here, before backing off. As Hegel notes, Kant himself claims in §76 that "two entirely heterogeneous elements [are] required for the exercise of these faculties" (KdU 272, 5:401, Hegel's emphasis) without asking whether or not this is the *only* way these faculties are exercised, or whether there might be other "exercises of these faculties" possible in different ways – for instance an exercise for which possibility and actuality are not separate in the way they are for discursive intellection. For example, might the reflections with which Kant began the "Critique of Teleological Judgement", on organic nature, offer us an example of this sort of exercise – where we can tell from seeing the whole cow that it *must* have a stomach, that it is not just as contingent a possibility whether it has one or not?

But Kant insists on demoting this exercise of our cognitive faculties to second-rank; we must instead take cases where actuality and possibility come more neatly apart as being the only cases there really are:

> [...] appearance is [for Kant] an absolute essence; it is the in-itself of cognition – as if it were not also an exercise of the cognitive faculty when it conceives and knows that an

> intellect for which possibility and actuality are not sundered, in which universal and particular are one and whose spontaneity is at the same time intuitive, is a necessary Idea. Kant has simply no ground except experience and empirical psychology for holding that the human cognitive faculty essentially consists in the way it appears [in this experience], namely in this process from the particular to the universal. Yet he himself thinks an intuitive intellect and is led to it as an absolutely necessary Idea. So it is he himself who establishes the opposite experience, of thinking a nondiscursive intellect. He himself shows that his cognitive faculty is aware not only of the appearance and of the separation of the possible and the actual in it, but also of Reason and the In-itself. Kant has here before him both the Idea of a Reason in which possibility and actuality are absolutely identical and its appearance as cognitive faculty wherein they are separated. In the experience of his thinking he finds both thoughts. However, in choosing between the two his nature despised the necessity of thinking the Rational, of thinking an intuitive spontaneity, and decided without reservation for appearance. (GuW 89-90)

Though Hegel's thinking in this essay is extremely compressed, it is clear how important the notion of an intuitive intellect, in narrowly the sense of Kant's §76-77, is for Hegel at this point in his thinking. He thinks that what for Kant in these sections was a mere thought is in fact our reality, and that Kant should have been able to grasp this from the mere fact of how he presented the supposed mere thought: to grasp the organic nature we encounter in experience, we must think by means of a sort of intellect which Kant himself describes, but denies us because he associates it only with a divine intellect. Hegel's frustration at this point is clear and relatable; however, his argumentation is compressed and may be unsatisfying to any Kantian who feels a need to defend the Sage of Königsberg on this point.

Nowhere in this section of his essay does Hegel so much as *mention* intellectual intuition. Intellectual intution comes up only in the essay's third part, on "Fichtean philosophy", where

Hegel complains that "Fichte's intellectual intuition is merely a formal affair." (GuW 154)[153] Intellectual intuition, in "Faith and Knowledge", is not nearly as interesting to Hegel as the intuitive understanding is.[154]

VIII. Intellectual Intuition in Schelling

Before closing my account of Hegel's Critical Journal period, it is helpful to return to the Schellingian intellectual intuition which Hegel at this time claimed is "the absolute principle of philosophy" (*Differenzschrift* 173) but which he will soon abandon. Hegel takes this term proximately from Schelling, though it had also been championed by Fichte; both contrasted their views with Kant, for whom intellectual intuition was (like the intuitive understanding) something only a divine, and not a merely human, mind could possess – and which philosophy considers only to provide us with a contrast by which to understand Kant's claims about the human faculties of knowledge.

Throughout his philosophy, Schelling makes reference to something called "intellectual intuition". It is not obvious what he means by this term, or if he is consistent in its sense throughout the various turns his thinking takes, or exactly how this term relates the same

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[153] The details of Hegel's criticism of Fichte are outside the scope of this dissertation, especially since on this point Hegel *does* seem to me to follow Schelling (at least in this essay).

[154]For the sake of completeness, I have consulted the notes we have for Hegel's 1803 and 1805 lectures on the philosophy of nature. In these tangled and murky lectures, I think we can see Hegel working his way towards a system more than presenting one. I did not find in these lectures anything which I thought it necessary to bring up for purposes of the story I want to tell. A properly historical account of the development of Hegel's thinking on these topics can only come after we have at hand a robust philosophical account of the views Hegel eventually develops. For an attempt at this, which in my view is limited by the breadth of its scope as well as by the thinness of the analysis of Hegel's mature views which it builds towards, see (Sell 2013).

expression in Kant and in Fichte.[155] Schelling seems to appeal to intellectual intuition in order to motivate his Spinozistic speculative efforts (which perhaps find their most explicit presentation in "Presentation of My System of Philosophy" (Schelling 2001b), which Schelling attempted to write *more geometrico*[156]), in contrast to Fichte's contrast of his efforts to Spinoza's dogmatic approach to philosophy.

One feature of his usage of the term "intellectual intuition", which Förster draws attention to, is that for Schelling "intellectual intuition" in *Naturphilosophie* is supposed to parallel the use of it in (broadly Kantian-Fichtean) "transcendental philosophy"; these are the two philosophical sciences which are supposed to unite all knowledge within themselves and so jointly exhaust "the Absolute". In what Schelling calls "transcendental philosophy" intellectual intuition takes us from the self-positing of the I to the *a priori* determinations of both (phenomenal) objects and (moral) subjects as the conditions of the I's self-positing. Schelling thinks that Fichte had largely shown the way to carry out this philosophical project in his *Wissenschaftslehre*. But, to Fichte's great puzzlement, Schelling always insisted that philosophy also had a second part, where intellectual intuition begins with the not-I (nature in general) and develops out to expound the variety of (natural) objects, climaxing in the natural existence of a free moral subject. As Förster

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[155]This point has strongly divided interpreters. Though older literature (and current non-specialist literature) routinely refers to works such as "On the I" as "Fichtean", some, like Nassar, argue that Schelling only ever allied himself with Fichte pragmatically, while the motivations and core assumptions of his philosophy were always at variance with Fichte's (perhaps derived from Plato's "Timaeus"). Schelling himself seems to endorse both readings of his early work at different times, depending on his present opinion of Fichte.

[156]This strange text is illuminating as a testament both to how systematic Schelling can be and how rigorously he can formulate arguments for his fundamental views.

complains, this seems to be a total misunderstanding of Fichte's appropriation of Kant's term "intellectual intuition". Fichte's I knows itself via intellectual intuition because its thinking of itself is just its (non-sensible) intuiting of itself ; concept and intuition go together in intellectual intuition, because I can think of an "I" only by being an I, and knowing this of myself – the I which I know in intellectual intuition is just this knowledgeable activity, and to think of an I which is not myself, I must think of them as *another* I. But in thinking of nature in general, I do not think of myself *as* being nature in general; my conceiving of nature in general does not bring with it an intuition of anything particular, unlike in the case of the I. Förster complains that It has never been made clear how Schelling might have convinced himself that Fichte's "transcendental philosophy" was one mode of two necessary ways of philosophizing, which shared a method : "The question however remains whether an intellectual intuition in which one abstracts from the intuiting subject [and instead treats of the object, the "not-I"] can really amount to more than word-play." (Förster 2012 248)[157]

[157]Fichte was very skeptical of Schelling on this point. Fichte wrote to Schelling that he had not read any of his *Naturphilosophische* writings in a letter of October 3, 1800. A month later, in a letter of November 15, Fichte objects that "I still do not agree with *your opposition between transcendental* philosophy and philosophy of nature. Everything seems to be based on a confusion between *ideal* and *real* activity, which we have both occasionally made; and which I hope to completely clarify in my new presentation." (Vater & Wood 42) In reply, less than a week later on November 19, Schelling insists that "The opposition between transcendental philosophy and philosophy of nature is the chief point. I can only assure you: the reason I make this opposition lies not in the distinction between ideal and real activity; it is something higher." (Vater & Wood 44) By the following year, the correspondence had devolved to the point where Fichte objected, in a letter of October 8 1801, that "I naturally had to believe that you had *wanted* to present transcendental idealism in your *Transcendental Idealism* [...]– the sole possible transcendental idealism, namely the one available to the world in Kant's and my writings – but it was obvious that you did not understand it – and that you still have not understood it, and that if you continue on the path you are taking will never understand it." (Vater & Wood 67); and that "a transcendental idealism of the kind you [Schelling] find in the *Wissenschaftslehre*, and which you have presented in your works, is nothing else than formalism, one-sidedness, at most a

Dalia Nassar has argued that the reason it is obscure how Schelling could make such a blatantly illegitimate move as to extend Fichte's intellectual intuition of the I to an intuition of all of nature is that Schelling really made no such move: she says that Schelling's claim to intellectual intuition "does not involve an extension and misappropriation of his earlier Fichtean conception of the I." (Nassar 2014 114-115). It is common to see references to the young Schelling as having a "Fichtean" phase, for instance in essays such as "On the I as a Principle of Philosophy" (*Vom Ich als Prinzip der Philosophie oder über das Unbedingte im menschlichen Wissen*, 1795). Nassar has argued on convincing textual grounds that the role Schelling puts "intellectual intuition" to in his work shows that thinking of the early Schelling as a disciple of Fichte is a misunderstanding:

> It is in *Vom Ich* that Schelling speaks of intellectual intuition (*intellektuale Anschauung*) for the first time. [...] Fichte's only public mention of intellectual intuition at this point was in his *Aenesidemus* review. Fichte does not speak of intellectual intuition in either *Über den Begriff* [*der Wissenschaftslehre*] or the *Grundlage*, making it even more striking that Schelling grants intellectual intuition such prominence in *Vom Ich*. It was not until the 1797 "*Erste Einleitung in die Wissenschaftslehre*" that Fichte places intellectual intuition at the center of his understanding of the I. [...] the claim that Fichte's understanding of intellectual intuition played a determining role in Schelling's conception is not only an overestimation of Fichte's influence on Schelling but also overlooks the fundamental differences in their conceptions and uses of the term. (Nassar 2013 175)

Schelling understood expressions such as "intellectual intuition" and "the absolute I" very

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separate section cut from a bad plan of a *Wissenschaftslehre*: it follows that philosophy of nature is not a special pole of philosophy, but simply a part of the latter" (Vater & Wood 73). It is Fichte's consistent judgement, once he began to read Schelling's *Naturphilosophie*, that a *Naturphilosophie* of the sort Schelling held to be necessary is in fact not only not necessary, but so confused a notion that Schelling must not have understood transcendental thought at all.

differently from Fichte even in works such as "On the I", Nassar argues:

> Schelling was not extending Fichte's conception of intellectual intuition onto nature, and thereby making the mistake of applying what is only applicable to the self onto the realm of nature. Rather, from the beginning, Schelling understood the absolute I as the *ground* of self-reflection, and thus irreducible to it. The absolute I and the categories that belong to it are therefore different from Fichte's subjective I and its categories. (Nassar 2014 132)

Schelling is thus innocent of Förster's charge that Schelling arbitrarily extended an intuition which I properly have only of myself to an intuition of nature in general, because when Schelling wrote about "intellectual intuition" or "the absolute I" he *never* meant Fichte's unity of a thought and its object, of my act of self-reference and the self being just what so acts.

This can seem a pickwickian defense of Schelling, threatening to salvage the coherence of his views only by claiming they are about something other than what they seem to be about. But Anthony Bruno argues that if we want to understand the changes that occur in Schelling's philosophy early and late, across texts where talk of intellectual intuition is sometimes central and sometimes entirely absent, we must see Schelling as consistently concerned with responding to what Bruno calls "Agrippan skepticism" (Bruno 4) about systematic philosophy.[158] The felt need to respond to types of skepticism which Kant had not refuted initially motivated Fichte's own development, starting in his *Aenesidemus* review; the highest principle of philosophy, which is supposed to enable philosophy to systematically refute even the types of skeptics which Kant had neglected, Fichte calls "I". Bruno argues that it is this systematic task of grounding philosophy as a skeptic-proofed system, and not the content of what Fichte claims can do this

[158]Bruno takes this emphasis on "Agrippan skepticism" from his teacher, Paul Franks.

job, that Schelling took over from Fichte: "The possibility of systematicity [...] depends on an '*unconditionable*' principle that can provide the unity threatened by Agrippan skepticism. Under Fichte's influence, Schelling calls this unconditioned condition 'the I' and argues that it is apprehensible only by intellectual intuition." (Bruno 4) Schelling's 'I' is thus not a way of referring to onself first-personally, not what ordinary Germans would understand by "*Ich*", but is just a label for whatever can do a certain type of systematic work – whatever can unite all of the philosophical sciences and show the united totality to jointly exhaust "the Absolute". Bruno shows that Schelling is consistent across his corpus in using "intellectual intuition" in this precise sense, even in his late "positive philosophy", delivered after Hegel's death, when Schelling regards himself as the best critic of intellectual intuition and superior to Hegel. "Intellectual intuition" is said by the Schelling of "On the History of Modern Philosophy" (1833/34) to be "from the very beginning merely what is *wanted*; 'the pistol from which it is fired' is the mere wanting of that which is" (Quoted at Bruno 12). When Hegel complains in the Preface to the Phenomenology about "the rapturous enthusiasms which, like a shot from a pistol, begins straight away with absolute knowledge" (PhG§27 16) (which passage Schelling alludes to here), he is rejecting the sort of Schellingian intellectual intuition which he had previously called "the absolute principle of philosophy". It is a rejection of this Schellingian conception of how philosophy is to be systematic, how it is to claim "absolute knowledge", and how it is to relate to skepticism that changes with the Phenomenology: not Hegel's understanding of or appreciation for §76-77 of the third Critique and its "intuitive understanding".

There are clear developments in Hegel's thinking between the time he worked alongside Schelling and the writing of the Phenomenology of Spirit, but much of Hegel's view of Kant is

already established in these early works, especially the two long essays The Difference Between Fichte's and Schelling's System of Philosophy and Faith and Knowledge.[159] My chief aims have been to argue that even in these early "Schellingian" works, Hegel does not use "intellectual intuition" and "intuitive understanding" interchangeably, and that "intuitive understanding" in Hegel's texts always has a clear reference to KdU §77, not to Schelling's *Naturphilosophie*. Before I turn in my concluding chapter to look at how intuitive understanding operates in Hegel's mature Philosophy of Nature, and how Hegel shows the proper way forward from Kant through Goethe, I want to make some remarks on a work which I generally want to downplay for understanding Hegel's mature system: the Phenomenology of Spirit.[160]

IX. Philosophy of Nature in the Phenomenology of Spirit

The phrase "intuitive understanding" does not occur at all in Hegel's Phenomenology of Spirit. (The different term "Intellectual intuition" is mentioned once, in paragraph 17 of the Preface, and the topic of it is taken up elsewhere, but there is no connection between these passages and §76-77 of Kant's third Critique.) The Phenomenology is an outlier in this; as we have seen, Hegel mentions Kant's intuitive understanding when discussing the grasp of Ideas in both his earlier writings for the Critical Journal and in the later Science of Logic and Encyclopedia. The exceptional nature of the Phenomenology can be explained, however, by the fact that in this work Hegel deals with natural-scientific topics in a highly abbreviated fashion;

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[159]Sally Sedgwick focuses on these two essays in her 2012 book Hegel's Critique of Kant, where Förster's reading of the "intuitive intellect" is expanded to include works that Förster did not mention in his book, published in German in 2010.

[160]In downplaying the importance of the early Phenomenology for understanding Hegel's completed system, I follow Petry (BP lv).

his focus in this work is elsewhere. If the intuitive understanding is chiefly important for understanding Hegel's views on organic nature and our knowledge of it, as would make sense given that Hegel drew this notion from Kant's "Critique of Teleology", the absence of this term from the Phenomenology is understandable. But to provide some context before I finally conclude by looking at Hegel's mature Philosophy of Nature in my next and final chapter, for completeness's sake I will summarize how he handled this topic in the transitional Phenomenology.

The most important material in the Phenomenology for understanding Hegel's views on natural science are in the "Observing Reason" section with which the book's fifth chapter, on "Reason", opens. This is the first chapter that receives the double-counting that makes the book's structure notoriously complicated: it is labeled chapter V, but also part C, and part AA. When Hegel revisits the Phenomenology material in his Encyclopedia Philosophy of Spirit (paragraphs §413-439 of which are subtitled "The Phenomenology of Spirit"), the 207 paragraphs from the "Reason" chapter of the 1806 book become two brief paragraphs (§438 and §439). So it seems that even by Hegel's own later lights, this portion of the book incorporates a great deal of material that was better separated out and placed elsewhere in the system. In a passage added to the 1827 edition of the Encyclopedia Logic which makes mention of his early book, Hegel noted that the Phenomenology's method of presentation was "complicated, and what belongs to the concrete parts [i.e., the philosophies of nature and spirit] already falls partly within that introduction." (EL§25A, 64) This excessive complication is one reason Hegel did not actually use the Phenomenology as an introduction to his system once he had written the Encyclopedia volumes. As Michael Petry notes, "In the latter work it is no longer the *Jena Phenomenology*, but the

historical and systematic import of Kantianism which is used as an introduction." (BP lv) When reading the Phenomenology of Spirit, it must be kept in mind that by Hegel's own lights the book is a bit of a tangled mess, and its original stated purpose of introducing Hegel's system is better performed by simply studying Kant with systematic and historical sensitivity.

Teasing out what exactly is going on in the "Reason" chapter of the Phenomenology is beyond the scope of this dissertation; it is too much of a tangle. But it is interesting to note, for purposes of thinking about Hegel's philosophy of nature, what some of the topics are which are here tangled up. Hegel is, in "Observing Reason", at least dealing with the concept of a law of nature, whether there are chemical laws, whether there are biological laws, and whether there are psychological laws; he is also concerned with how to distinguish physical-chemical substances and how to distinguish species of plants and animals, and with the relationship of the Earth as a unified whole to the diversity of living species on the Earth, and the distinction between internal and external teleology. All of this is makes for an absurdly huge amount of material in a relatively few number of pages (65 in the Miller translation). Hegel also inserts a discussion of the nature of logical "Laws of Thought" into the middle of it, and concludes the section with a famously humorous section on "Phrenology and Physiology", climaxing in a threefold comparison of Kant's "infinite judgements", the sense in which spirit can be taken to be something merely natural, and the fact that, in men, nature "naively combines the organ of generation with the organ of urination" (PhG §346 210): all three are united in the famously odd claim that "Spirit is a bone".[161]

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[161] See (Holbo 2006) on the significance of this passage for Žižek's understanding of Hegel: "That's a perfectly good penis joke Hegel is holding there."

The fact that the Phenomenology does not mention its sources or targets in the course of its discussions is especially problematic when reading "Observing Reason"; it is simply unclear who Hegel is arguing against or referring to at many points in the section, given how many balls he has in the air at once. For these reasons, I will only draw attention to a few scattered remarks from the Phenomenology before returning to Hegel's mature system in my final chapter.

In PhG §255, Hegel harshly criticizes the idea of laws relating organisms to their environment, such as that "animals belonging to the air have the nature of birds, those belonging to water have the nature of fish, animals living in the north have thick, hairy pelts, and so on". (PhG§255 155) Hegel gives two objections that he sets aside: such laws "are seen at a glance to display a poverty which does not do justice to the manifold variety of organic nature" (ibid), i.e., these laws account for only very broad general features of organisms, and "Nature... everywhere presents exceptions to such laws, or rules as we might call them (*Gezetze oder Regeln*)" (ibid), i.e., these laws are strictly speaking falsified by experience. But both of these criticisms, though legitimate, do not go deeply enough to get at what really bothers Hegel about these "laws". Hegel's deeper criticism, by his own lights, is that

> the characterization of the creatures to which [these laws] apply is so superficial that even the necessity of the laws cannot be other than superficial, and amounts to no more than the *great influence* of the environment; and this does not tell us what does and what does not strictly belong to this influence. Such relations of organisms and the elements [*Beziehungen des organischen auf das elementarische*] cannot therefore be called *laws* [*Gesetze*]." (ibid, emphases in original)

We have no laws concerning organic nature because what are put forward as "laws" are too vague and airy to really account for even the very general features of organisms they are appealed to in accounting for: the vagueness of these "laws", which posit only a "great influence" of

environment on organic structure, is why these "laws" seem to be both always already falsified by experience and inadequate to nature's richness. The vagueness of these "laws" makes it unclear what they are even supposed to account for, what would so much as count as confirming or falsifying them. These sorts of "laws" are mere gestures at possible forms of explanations, not high-level laws of organic nature. Actual explanations of features of organic nature require dealing in specifics, and when we descend to those specifics the appearance that we might have "laws of organic nature" in view drops out.

The lack of any genuine laws for explaining organic nature is then treated by Hegel as the motivation for introducing external teleological explanations, and then for replacing them with internal teleological explanations (in a very dense paragraph §256). Confusingly, in §262 Hegel then *returns* to an apparent organic law, "the law *that the inner is the expression of the outer*" (PhG§262 160, emphasis in original) before undermining this particular law, as well as an accompanying anatomical doctrine that tried to account for life in terms of sensibility (expressed in the nervous system), irritability (expressed in the muscular system), and reproduction (expressed in the visceral system).[162] Significantly for our purposes, Hegel's conclusion here is explicitly that what are called "sensibility", "irritability", and "reproduction" are all features of the whole organism, and not of any separable part of it. Reproduction is explicitly identified with "the action of this *whole* introreflected organism, its activity as in itself an end, or as *genus*" (PhG§266 161, emphases in original) and as having the sense of "*self-preservation in general*, [expressing] the formal concept of the organism" (ibid, translation modified), which agrees with

[162]This same anatomical doctrine comes in for a much more extended, and more comprehensible, criticism in the Philosophy of Nature§354Z; Schelling had made productive use of this doctrine in his First Outline of the System of the Philosophy of Nature (Schelling 2004).

the mature Hegelian views I articulated in chapter two: that a living being is a totality of members which maintains itself in and through its environment in the manner of some particular kind.[163]

In §269, Hegel considers a Schellingian reply to his criticism of organic laws, that we have not found them so far because natural science has yet to proceed on the basis of "the Idea" (as Schelling had urged was necessary for the completion of science in, e.g., *Further Presentations from the System of Philosophy* (Schelling 2001a)). This Schellingian thought is that some sort of "experience of a higher kind", to use Goethe's Platonizing phrase, might allow us to grasp via a flash of insight organic laws that ordinarily escape observation. But Hegel states that this is not so: "observation is unable to perceive these laws, not because, *qua observation*, it is too short-sighted and ought not to proceed empirically but ought to start from the Idea – for such laws, if they were something real, must in fact actually exist and therefore be observable; but rather because the conception of laws of this kind proves to have no truth." (PhG§269 162) Hegel further argues that this enterprise of trying to "start from the Idea" is really an "empty play of formulating laws" (PhG§272 164) and that "In this way the representation of a *law* in the case of organic being is altogether lost." (PhG§278, 167, emphasis in original, translation modified); the whole approach Hegel has in view was engaged in "a deceptive promise of laws" (PhG§286

[163] Hegel does not mention procreation or a necessary plurality of individuals in these discussions, which accords with my interpretation of the genus-process in chapter three. Procreative language is introduced only in §291-293, where Hegel is contrasting the variety of living species with the unity of spirit, which also accords with my reading. (He had already introduced just this contrast in §80 of the book's Introduction when contrasting the way in which "natural life" is "confined by limits" to the way that "Consciousness... is something that goes beyond limits." (PhG§80 51)) See also the way that the Encyclopedia Logic uses the notion of spirit as "free genus" to transition to the discussion of Knowledge (EL§222 294).

172).[164] He finally concludes that

> here observation [that claims to start from the Idea] cannot do more than to make clever remarks, indicate interesting connections, and make a friendly approach to the concept. But clever *remarks* are not a knowledge of necessity, *interesting* connections go no further than being 'of interest', while the interest is still nothing more than a subjective opinion about reason; and this *friendliness* with which the individual alludes to a concept is a childlike friendliness which is childish if it wants to be, or is supposed to be, valid in and of itself." (PhG§297, 179-180, emphases in original)

Hegel's target in these sections of the Phenomenology becomes clearer if one reads these passages in light of his "History of Philosophy" lectures, where he elaborates on these Schellingian efforts at a philosophy of nature:

> This formalism of applying an external scheme to the sphere of nature which is under consideration is the superficial work of philosophy of nature, and the scheme itself is borrowed from the imagination. That is a bad way to proceed; Schelling had taken advantage of it to some extent, while others have made a complete misuse of it.... It is therefore of the greatest importance to distinguish Schelling's philosophy, on the one hand, from the imitation of it which throws itself into an unspiritual farrago of words regarding the Absolute; and, on the other hand, from the philosophy of those imitators who, owing to a failure to understand intellectual intuition, give up comprehension, and with it the leading moment of knowledge, and speak from so-called intellectual intuition, i.e. they take a glance at the thing, take themselves to have articulated its nature, and in fact banish all scientific inquiry. [...] or they bring their minds to bear on the observed by saying, for instance, that the ostrich is the fish among the birds, because it has a long neck – "fish" becoming something general in this way, but not a concept [i.e., this sort of analogizing and "thinking in pictures" is not *thinking*]. This whole manner of proceeding,

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[164]The question of whether biology traffics in laws is still a live one; see (Beatty 2006) and the discussion in the first chapter of (Lloyd 1994).

> which has forced its way into natural history and natural science, as well as into medicine, is quite a miserable formalism, a thoughtless mixing of the crudest empiricism with the most superficial ideal determinations that formalism ever descended to. [...] Philosophy is thereby reduced into general and well-deserved contempt, such as is for the most part extended to those who assert they have a monopoly on philosophy. (LHP 543-4, translation modified)[165]

In these Schelllingian epigones we can see the result of a certain conception of Goethe's "intuitive power of judgement": if what a Goethean investigator of nature is supposed to do is just to observe particulars until they grasp a general pattern which they can express in terms of a law (as Förster thinks we should understand Goethe), then we can see that Hegel absolutely repudiated the enterprise as analogy-mongering and superficiality. Taking oneself to have grasped "the nature" of a natural phenomenon because of a special sort of intuition one has

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[165]"*Dieser Formalismus, ein äußerliches Schema anzuheften an eine Sphäre der Natur, die man betrachten will, ist das äuberliche Thun der Natur-Philosophie: und sie nimmt dieß Schema selbst aus der Phantasie. Das ist die schlechtefte Weise; Schelling had es sich auch schon zun Theil leicht gemacht, die Anderen haben es völlig mißbraucht. [...] Um meisten muß also von der Philosophie Schellings das unterschieden werden, wie seine Nachbeter eines Theils sich in einen geistlosen Wortschwall vom Absoluten hineingeworfen haben: andern Theils aus Misverstand der intellectuellen Anschauung das Begriefen und damit das Haupt-Moment des Erkennes aufgeben, und aus der sogenannten Anschauung sprechen, d.h. das Ding eben angucken, und damit die Natur desselben ausgesprochen zu haben meinen, in der That aber alle Wissenschaftlicheit verbannen. [...] oder auch sie bringen das Angeschaute so im Bewegung, daß sie z.B. sagen, der Fisch unter der Vögeln ist der Strauß, weil er einen langen Hals hat, – Fisch wird zu etwas Allgemeinen, aber nicht zu einem Begriffe. Diese ganze Manier, die in die Nautgeschichte und Naturlehre, so wie in die Medicin eingeriffen ist, ist ein so elender Formalismus, eine so gedankenlose Vermischung der gemeinsten Empirie mit den oberflächichsten ideelen Bestimmungen, als je eine Formalismus schlecht gewesen ist. [...] Die Philosophie ist dadurch in eine allgemeine Verächtlichkeit und Verachtung herunter gefunten, welche viejenigen am meisten theilen, welche verfichern, im Befiße des Philosophirens zu senn*." (VGP 615-6)

passively received is for Hegel absolutely wrongheaded.[166]

Whatever Hegel's positive account of how organic nature is to be known by means of Ideas will be, it *cannot* take the form of a prior grasp of an Idea, and the application of this Idea to natural materials given in experience in order to deduce particular laws: this is just the twofold error criticized in "Observing Reason". A proper philosophy of nature cannot stamp a pre-existing Idea onto nature to derive nature's forms therefrom; this is formalistic, and not a genuine grasp of an Idea at all, as the existences which the supposed Idea is meant to illuminate are given by mere observation, through the senses, while independently the Idea is to be grasped by a supposedly supersensible faculty of the mind. Anything grasped in such a way could not be an Idea in Hegel's logical sense, could not be "the unity of concept and objectivity".

A proper Hegelian philosophy of nature also cannot take the form of issuing in anything like *laws* of organic nature, as were supposedly deducible from some Idea grasped by intellectual

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[166]It is also in these lectures that we find Hegel's clearest criticism of Schelling's Spinozistic methodological leanings: "Schelling often used the form of Spinoza, setting up axioms. When one philosophizes, one wants to have proof that something is so. But if intellectual intuition is made our beginning, this becomes an oracle to which we have to give way, since it was made our postulate that one can intuit intellectually (*daß man intellectuell anschaue*) [i.e., we asked the reader to grant this, we merely wanted it to be the case.].... Schelling really had [the correct] conception in a general way, but he did not follow it out in a definite logical method – for with him it remained an immediate truth which can only be verified by intellectual intuition. This is the great difficulty in Schelling's philosophy." (LHP 526-7, translation modified, 598-9 in VGP.) "In a general way" Schelling was right that amending Kant's and Fichte's philosophies requires that we pay more attention to the way philosophy thinks about nature and the natural sciences – but Schelling failed to do this work himself in any rigorous way, which is what Hegel signals by his complaint of Schelling's lack of "a definite logical method". Schelling obscured this lack by recourse to what he called "intellectual intuition", which was supposed to do the missing work. Schelling's epigones were worse than Schelling, by Hegel's lights, because they were confident that they actually possessed intellectual intuition as an empirical matter, while Schelling held more firmly onto it as a postulate to merely begin constructions from.

intuition; Hegel's Ideas in his Philosophy of Nature must enable us to know living nature without giving us any knowledge of (Newtonian-style) laws of living nature, for Hegel is adamant that there are none. In this way Schelling, and his epigones, can be seen to be closer to the Kant of the Introduction to the third Critique, who was concerned in all natural inquiry with discovering ever-greater specifications of nature's laws; Hegel on the other hand is here far from Kant. Kant and Schelling worried about how to connect our grasp of very general laws of nature (such as those in Kant's Metaphysical Foundations of Natural Science) to the manifold of empirical phenomena, and both made use of an image of God as being able to grasp the totality of phenomena along with the totality of laws of nature as a sort of ideal for our own knowledge to aspire to.[167] Hegel, as I will argue in the next chapter, denies that there is any linkage between the most general laws in nature and the full diversity of nature as we encounter her in experience: for Hegel the totality of empirical phenomena cannot all be grasped by any system of laws, and so he sees no utility in thinking of God as able to grasp such imaginary laws all at once.

X. Conclusion

This concludes my historical introduction to Hegel's mature work; I have shown that even in these early writings, Hegel's thinking about nature is far from being a mere parroting of Schelling, and Hegel was already keenly interested in Kant's notion of an intuitive understanding as relevant to thinking about organic nature. In the next chapter I will turn to a view of Hegel's philosophy of nature as a mature entity. As a segue to this, I want to draw attention to the passage from the Science of Logic where Hegel twice mentions the intuitive intellect, for it is strikingly

[167]In Kant see the Appendix to the Transcendental Dialectic in the first Critique and the Introduction to the third Critique.

similar to passages from the *Differenzschrift* and Faith and Knowledge. The passage occurs in the final pages of the introduction to the "Logic of the Concept", the section Hegel titles "The Concept in General":

> It will always stand out as a marvel how the Kantian philosophy recognized the relation of thought to sensuous reality, beyond which it did not advance, as only a relative relation of mere appearance, and perfectly well recognized and enunciated a higher unity of both in the Idea in general and, for example, in the Idea of an intuitive understanding, and yet stopped short at this relative relation and the assertion that the Concept is and remains utterly separate from reality – thus asserting as *truth* what it declared to be finite knowledge, and denouncing as an unjustified extravagance and a figment of thought what it recognized as *truth* and of which it established the specific concept. [...] When Kant, in connection with logic, comes to discuss the old and famous question: *what is truth*? he first of all *presents* to the reader as a triviality the explanation of the term as the agreement of knowledge with its object – a definition of great, indeed supreme, value. [...] If Kant had considered the Idea of an *intuitive understanding* in the light of the above definition of truth, he would have treated that Idea which expresses the required agreement, not as a figment of thought but rather as the truth. (WdL 592-3, emphases in original, translation modified)

"The Concept in General" contains a wide-roaming discussion of Kantian themes, including a discussion of the Transcendental Deduction and the relation of space and time to logic, but it is this topic on which Hegel wants to end his introduction: Kant's thinking of an intuitive intellect, and his failure to do *more* than merely think it, to recognize his own thought as in fact a truth. This failure of Kant's, above all, frustrated Hegel deeply: it is this frustration that I have been tracing throughout my dissertation.

In my concluding chapter, after preparing the ground for Hegel's Philosophy of Nature to begin to be understood, I will lay out how I see Hegel as appropriating what is most vital in Kant

and in Goethe in articulating how our knowledge of living nature involves thinking by means of Ideas.

Chapter Six: On the Very Idea of a Hegelian Philosophy of Nature

I. The Beginning and the End

In this final chapter I will make some remarks about why Hegel's Philosophy of Nature has been underappreciated and misunderstood, show that some main alternative readings of the work as a whole are seriously misguided, and then finally articulate the positive upshot of Hegel's approach to these topics as opposed to Kant's.

Stephen Houlgate has perhaps been the most influential reader of Hegel in the anglophone world in recent years; his view of Hegel's system functions as a sort of orthodoxy for "heretics" like Robert Pippin to react against. In my view Houlgate's influence has been damaging to the understanding of Hegel, as his Platonizing account of the Logic colors many people's understanding of what Hegel could possibly be up to, to such an extent that Hegel's actual interests and goals are overlooked. In the context of Hegel's philosophy of nature, Houlgate's views fail on two main fronts: his understanding Hegel's talk of "Ideas" as always meaning (more or less) God; and his strongly a priori account of how Hegel's Philosophy of Nature is structured and develops. After discussing and criticizing Houlgate's account of the Philosophy of Nature in his book An Introduction to Hegel: Freedom, Truth, and History, I will turn to the start of the history of the reception of this work of Hegel's, as I believe that the sorts of misunderstandings which have lead to Houlgate's reading had their start very early in the reception of Hegel. Hegel's own editor, Karl Michelet, bears some of the blame for the misunderstanding of Hegel's philosophy of nature, as his attempts to woo Schelling towards a more favorable view of Hegel's system has lead many of Hegel's readers to closely identify Hegel's account of nature with Schelling's more famous *Naturphilosophie*.

II. Houlgate's Hegel on Nature

In my discussion of Ideas in Kant, Hegel, Goethe, and Schelling, I have rarely mentioned God; I do not think it is necessary to mention God to understand what any of these thinkers mean when they speak of "Ideas", as the Idea of God is only one example of an Idea.[168] Houlgate, on the other hand, explicitly holds the opposite view: "Hegel does, indeed, equate the Idea and God in so far as he maintains that religion pictures as 'God' what philosophy knows to be the Idea." (Houlgate 2005 109) Houlgate further identifies God with "logical necessity": "Hegel believes that logical necessity – the Idea or 'God' – is at work in nature at all times, pressing, as it were, for the emergence of various natural phenomena." (Houlgate 2005 112) On Houlgate's view, Hegel's nature is full of a divine "logic" which should properly be called "the Idea" which operates much as the "intelligent designer" of evangelical theism does: in nature it constantly works as a craftsman to bring forth various features, which must be present in nature because the designer wills that they be there. This is a serious misunderstanding of Hegel, who (as I discussed in Chapter 2) has little time for any view of nature as "designed" or of God as relating to nature in terms of external purposiveness. The thought that God might be "pressing for the emergence of various natural phenomena" commits the twin sins of reducing God to an external influence on the world, rendering God finite and the world as an independent existence over against him (which God can only "press" on), and of making natural order into a mere shadow of an independent "logical" order in a divine mind. Houlgate is lead to this view of nature as shot

[168]I think this distinction, between "Ideas" as a class and the Idea of God in particular is important for understanding Hegel's defense of the ontological argument, and its significance for his difference from Kant, independently of any theological interest. I plan to develop this point in future work, see (Lindquist In Progress).

through with "logical necessity" by a peculiar understanding of how Hegel must carry out his task, one that makes Hegel look like a more familiar sort of Christian philosopher (such as the Aquinas of the *quinque viae*) rather than the radical liberal Lutheran he is. Houlgate correctly notes that "The task of the philosophy of nature, in Hegel's view, is to reveal precisely how reason manifests itself in nature." (Houlgate 2005 110) Discerning "reason in nature" is, by Hegel's own lights, what is at issue in thinking of the world as "created by God"[169]. But it would be a mistake to think that Hegel's treatment of nature as "created" involves him in anything

like trying to reason out facts about God from facts about the world, or vice-versa; Hegel does

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[169]"Instead, the Concept is what truly comes first, and things are what they are through the activity of the Concept that dwells in them and reveals itself in them. This comes up in our religious consciousness when we say that God created the world out of nothing or, in other words, that all finite things have emerged from the fullness of God's thoughts and from his divine decrees. This involves the recognition that thought, and, more precisely, the Concept, is the infinite form, or the free, creative activity that does not need a material at hand outside it in order to realise itself." (EL §163Z2, 241) Note that when explicating this religious imagery, Hegel claims that the point of affirming the "creation of the world from nothing" is precisely that the world does not depend on anything other than its intelligible structure to be what it is; the rejection of an eternal "material" is what Hegel sees as more important than the affirmation of an eternal "craftsman". See also (EL §213Z, 288): "When we speak of the Idea, it must not be taken to mean something far away and beyond. Instead, the Idea is what is perfectly present, and it is likewise to be found in any consciousness too, however confused and impaired it may be. – We imagine the world as a great whole which has been created by God – in such a way that God has manifested himself to us in it." Hegel is thus quite a different sort of thinker than someone like Aquinas, who affirms "the way of remotion" (reasoning from effects to causes) as the only way to think about God, and the skepticism that goes with this method: "Now, in considering the divine substance, we should especially make use of the method of remotion. For, by its immensity, the divine substance surpasses every form that our intellect reaches. Thus we are unable to apprehend it by knowing what it is. Yet we are able to have some knowledge of it by knowing what it is not." (Aquinas Contra Gentiles chapter 14) Hegel follows Spinoza in not shying away from claiming to know what God is; Hegel takes seriously the words of the Apostle that "No one has ever seen God, but God the only Son, who is in the bosom of the Father, has made him *known*" (1 John 1:18, NRSV, my emphasis).

not want to think of God as limited in this way, just one being alongside the world as just another being. God is spirit, and can be known only as spirit – this is what Hegel deals with in the final sections of his system, on "Absolute Spirit", where through art, religion, and philosophy God is known as he is in his activities through our history. When Hegel brings up God-talk before these final sections, he is either speaking proleptically or using the vocabulary of another thinker to illuminate his own. By Hegel's own standards, God is not properly introduced as a topic worth calling "God" until spirit sees itself face to face in the ends of the system. The Philosophy of Nature thus does not concern itself with theology, and no divine "Idea" needs to be presupposed as guiding the development of the materials Hegel concerns himself with in this work.

Houlgate immediately follows his claim about the task of the Philosophy of Nature with a *non sequitur* about how to carry out this task: "In order to carry out this task philosophy must seek to discern the rationality that is immanent in nature in particular – the distinctive *logic of nature*" (Houlgate 2005 110, Houlgate's emphasis). But Hegel never uses the phrase "logic of nature"; for Hegel the only "logic" is the science of thought, and the philosophy of nature is something other than logic. This phrase, "logic of nature", is then a recurring feature of Houlgate's account; anyone familiar with Houlgate's reading of the Science of Logic as a "presuppositionless unfolding" of seventy or so logical categories from the thought of "Being" (which the philosopher is supposed to merely watch happen)[170] will notice that Houlgate sees the

[170]"The aim of the presuppositionless philosopher [...] is simply to consider the indeterminate thought of being itself, to dwell with that category for its own sake, and to observe where, if anywhere, it takes us." (Houlgate 2006 51) Interestingly, when introducing this topic Houlgate immediately notes that his reading of it agrees with that of Hegel's *critics* Schelling, Trendelenburg, and Climacus; Houlgate differs from their reading of the relevant texts in thinking that Hegel's doctrine is profound rather than plainly confused. (Houlgate 2006 29-30)

exact same method at work in the "logic of nature" as in Hegel's Logic proper.

In logic we are concerned with thought as such; in the philosophy of nature we are concerned with nature as such, with what thoughts are *about*. It would be surprising if the philosophy of nature, which Hegel is explicit depends on the empirical sciences for its content,[171] was to develop *a priori*, but this is Houlgate's view: "A scientific theory is deemed to be true only if it is confirmed by observation or experiment. By contrast, a proposition in the speculative philosophy of nature is held to be true if it is derived logically – by pure *a priori* reason – from the very nature of nature itself (and, ultimately, from pure indeterminate being)." (Houlgate 2005 115) A cursory glance at Hegel's text shows him to be engaged in detail with the scientific literature of his day, which he references extensively in his lectures; when he criticizes a scientific theory he almost always is defending one view in the literature against rivals (as he defends Goethe's optics against Newtonians, or tries to harmonize the vulcanists and the neptunians in his account of geology), but on Houlgate's account these empirical details are really unnecessary for Hegel's speculative method: "Indeed, he maintains, philosophy is able to derive *a priori* some of the very laws of nature that science discovered empirically before the speculative philosophy of nature was conceived, including, for example, Galileo's law of free fall and Kepler's three laws of planetary motion." (Houlgate 2005 116) These claims are outlandish on first sight, and if Hegel really believed such things, then it is obvious why his Philosophy of Nature has fallen into neglect, but Houlgate insists that this was Hegel's view and attempts to defend it. Houlgate's defense is unsuccessful by his own lights; I will focus on his account of Kepler's laws, as these were for Hegel the paradigm of what laws can be in natural science.

[171]I will return to this point in section V of this chapter.

Houlgate faithfully repeats what he takes to be Hegel's arguments for the *a priori* necessity of each of Kepler's three laws, but he is unable to endorse any of them. I take it to be a sign that there is a problem with Houlgate's apriorist approach that, if Hegel is attempting the project Houlgate says he is (a more ambitious Kantian-Schellingian construction of natural forms), Hegel seems to have done such a poor job of it: "It has to be admitted that, taken by itself, Hegel's condensed argument [for the first law] in the lines just quoted is barely intelligible" (Houlgate 2005 149); "This argument [for the second law] is highly abstract and unlikely to win over all readers" (Houlgate 2005 151); and finally

> Hegel thought it very important to provide a persuasive philosophical proof of Kepler's laws. Yet it is hard to disagree with his judgement that, despite his own best efforts, the philosophical derivation of Kepler's laws 'has not yet been fully accomplished'; his arguments are by no means unintelligible, but they remain underdeveloped. Nevertheless, those arguments do make Hegel's principal underlying claim clear: the laws of planetary motion are not just contingent but are grounded in the nature of space and time and so are made necessary by nature itself. (Houlgate 2005 153)

Though Houlgate does not think Hegel was *successful* in proving *a priori* Kepler's three laws to be necessary truths of the logic of nature, he thinks this project is a respectable one which remains independent of empirical science, genuinely *a priori*:

> In my judgement, Hegel's Philosophy of Nature is intended not just to systematize the scientific knowledge of Hegel's own day but to determine what is made logically necessary by nature itself. If it is successful in this task, there will still remain a huge amount of work for science to undertake, but no future scientific discovery will be fundamentally incompatible with the insights of philosophy. If discoveries incompatible with philosophy are made, however, then the philosopher will clearly have to think again. (Houlgate 2005 160)

To begin my defense of Hegel's Philosophy of Nature as innocent of the features Houlgate attributes to it, I will look at his supposed *a priori* proof of the logical necessity of Kepler's first law, that planetary orbits are elliptical in shape. The details of the actual "proof" are actually irrelevant for my purposes;[172] I begin with Hegel's conclusion of it, for what I care about is how Hegel thinks of the *status* of what he has done in the passage that Houlgate takes to be a (failed) *a priori* derivation of these elliptical orbits:

> The path must therefore be elliptical, for its complete motion is a revolution. We know from observation that the ellipse does not correspond precisely to the course of the planets, and other perturbations are therefore to be assumed. It is for subsequent astronomy to decide whether or not the path of the orbit has profounder functions than the ellipse, it may perhaps be the oval line, etc. (PN§270Z, PNI 270).

Though Hegel does think there is some sense in which it can be argued that satellites orbit in ellipses, with orbits determined by reference not to a single center but to a pair of them (which is

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[172]Hegel seems to me to reason as follows in his "proof" of Kepler's first law: the orbits of the planets must not be simply uniformly determined by the center they revolve around, for this determination uniformly by reference to a "center" is how falling motion works, and orbiting motion is not falling but is stable. But if the orbits are not uniformly determined motions, they cannot be circular, for circles are the shapes where every part of the shape is determined by relation to its center in the same way. But if the orbits are not circular, they must be elliptical. Hegel seems to me to beg the question here of whether the planets are falling towards the sun; he chastises Newton for having to posit this "falling" centripetal force to counterbalance a perpendicular "inertial" force along a tangent to the orbit, but Hegel's contrary posit of "free motion" as a characteristic of orbiting bodies involves notions no less occult than Newton's forces. For a defense of Hegel's planetary mechanics, specifically on the grounds that the planets move in a "free motion" distinct from fall, see (Rand 2017). There is a further, merely geometrical difficulty with Hegel's argument: circles can be treated as special cases of ellipses, and so circular orbits do not conflict with Kepler's first law. (The orbit of the Earth is very nearly a perfect circle, with an eccentricity of only 0.0167.) Hegel's attempt to show the truth of Kepler's first law by means of ruling out circular orbits is thus confused from the start, and cannot be rehabilitated; a Hegelian defense of the priority of Kepler over Newton will have to take a different form than any such proof.

signaled by his saying they "must therefore be elliptical"), it is important to note what immediately happens after Hegel states this conclusion: he acknowledges that we know, from observation, that the planets do not orbit in ellipses!

Not only does Hegel not claim that his account of Kepler's first law is immune to threat by future empirical discovery, but he acknowledges that it is already strictly falsified, and that future astronomers may find "profounder functions than the ellipse" to describe the shape of planetary orbits. *Contra* Houlgate, Hegel at no point in his lengthy discussion of Kepler's laws claims to prove anything *a priori* or from mere logic (even a "logic of nature"); he attempts only to show that if we deal with Kepler's first law on its own, instead of treating it as merely a law derived from Newton's general laws of motion, that we can understand the way the heavens operate better: "The greatness of this law consists in its presentation of the *rationality of the matter* with such simplicity and immediacy. In the Newtonian formula however, it is transformed into a law applied to the *force* of gravity, and so shows how *reflection* which fails to get to the bottom of things can distort and pervert the truth." (PN§168, PNI 269) Though Hegel's antipathy for Newton is obvious, he acknowledges that "The merit of Newton's form is of course that it has many advantages in mathematical treatment" (PN§168Z, PNI 272); Hegel's complaint is that for non-mathematical purposes, we are better served by keeping Kepler's several laws of planetary motion and Galileo's law of fall distinct from one another, and thinking of planets just as planets rather than as massive bodies operated on by occult forces. Forces such as gravitation are never given in experience; Hegel would prefer that in thinking about nature we cleave more closely to what we know, what is in fact given to us in scientific observations. Hegel grants that when we do this, the best we can do is produce laws which *are known to be false*, but he thinks that the

ways in which these false planetary laws enable us to come to grips with the heavens still retain value that would be lost if we tried to operate with more austere mathematized laws which trafficked in unknowable posits like occult forces.

I find Hegel's view of Newton's and Kepler's laws intriguing and suggestive, but would not attempt to defend them; there are many problematic aspects of Hegel's mechanics. For example Hegel consistently treats Newton's mathematical account of Kepler's laws as merely an abstract version of those same laws, when actually Kepler's laws are false if Newton's are true: according to Kepler's laws of planetary motion, there should be no perturbance in the orbits of Jupiter and Saturn, but they should be simply ellipses; Newton was able to account for much of the observed perturbance in these orbits by attributing an attractive force pulling each of these planets towards each other, distorting their orbits from neat ellipses as each came near the other. Hegel was aware that no existing account of the planetary orbits fit all of the observable data in his own day (most famously Newton could not account for the procession of the perihelion of Mercury, the fact that the point at which Mercury is closest to the sun itself moves around the sun), but he simply failed to give credit to Newton for accounting for more of it than Kepler.

No account of Hegel's philosophy of mechanics can ignore the fact that Hegel was aware of the limits of Kepler's laws: As Houlgate noted, Hegel lamented that his own defense of "the glory of Kepler" (PN§168Z, PNI 272) was not as clear or persuasive as he would like, as Houlgate noted, but Houlgate ignores the fact that for Hegel Kepler's laws themselves fall short of truth. Not only are these laws not *a priori* necessary, derivable from "pure unmediated being" or "the nature of nature", they are simply false – that is, falsified *by empirical observation*. For Hegel simple empirical observation is always the touchstone for the truth of empirical theories,

as all theories of natural science must be; sloppy or unskilled or metaphysically prejudiced observations all come in for criticism at various points in Hegel's Philosophy of Nature (for instance complaining that atomistic theories constantly receive unearned praise), but Hegel never questions that our accounts of nature must face "the tribunal of sense experience" (Quine 1951 41); this is just what makes them accounts of nature, of what thought must labor to come to grips with. Houlgate's assumption that Hegel is attempting an apriorist project requires that he deny this banality about the empirical nature of the empirical sciences. One symptom of this is that Houlgate assumes that Hegel means by "necessary" just what Kant did, so that the *a priori* and the necessary are coextensive. But the fact that Hegel thinks there is some sense in which Kepler's laws, despite being strictly false, describe necessary motions of the planets, ways that they *must* move, shows that this assimilation of Hegel's Philosophy of Nature to Kant's is problematic. For Hegel Kepler's laws are "necessary" in some sense other than being "logically necessary", or "*a priori*", or safe from empirical challenge. Hegel wants us to approach features of nature and come to realize "Ah, I see why it has to be this way" rather than gaping at them as sheer contingent facts, but this sort of realization that nature is not entirely accident is compatible with them being contingent in many respects – including being contingent on facts we know only empirically, for which we rely on simple observation to provide us with any security that we are not speculating wildly. Houlgate claims that "The principal purpose of Hegel's Philosophy of Nature is not to reflect on the method and validity of the natural sciences, but to deepen our understanding of nature itself – to reveal what space, time, and matter logically must be." (Houlgate 2005 115)

It will sum up my disagreement with Houlgate to note that on my reading there is no

sense to be made of the thought of "deepening our understanding of nature itself" except by dealing with "the method and validity of the natural sciences" and the theories developed by them; the point of the Philosophy of Nature is to free us from dualisms of nature as "what is out there, merely given to us" and what we ourselves are as inquirers into nature. Nature, what thought is about, must come to be known by us as both what we are and what we are not, what we are given and what we have from our own resources.[173] To put my point another way, Houlgate leaves in place a dualism of natural science and Philosophy of Nature, as respectively an empirical discipline and an *a priori* one; Hegel's Philosophy of Nature cannot be understood while such a dualism is left in place. If we are to understand what nature is and must be for spirit, how philosophy is to regard nature, then this must affect our view of the natural sciences, and the natural sciences must affect our view of what philosophy can do, the extent to which we can and cannot find ourselves at home in nature. No region of human thought can be left external to philosophy if Hegel is to be defended; thought must find itself at home in all its products. The ancient playwright Terrence wrote *Homo sum, nihil humani alienum puto*; the modern philosopher Hegel would have us say: I am a philosopher, no knowledge is irrelevant to me.

But merely setting Houlgate aside will not enable us to appreciate what Hegel's Philosophy of Nature is on about; the problems with reading it go back further than that. So I will next turn to the start of them all: Michelet's failed attempt to bring Schelling back to the

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[173]Hegel, on my reading, was thus already doing what Marx criticized Feuerbach (and "all hitherto existing materialism") for failing to do: "the thing, reality, sensuousness, is conceived [not] only in the form of the object or of contemplation, but [also] as sensuous human activity, practice, [...] subjectively." (Marx 1845) As Marx puts it in his fifth Thesis, a major aspect of this task is to "conceive sensuousness as practical, human-sensuous activity" much as John McDowell began to do in Mind and World and later essays. (McDowell 1994, 2009)

Hegelian fold. That this was the start of the problem that has led to Houlgate is no accident: the phrase "logic of nature", foreign to Hegel, is in fact found in Schelling's *Philosophy of Revelation*. (Grant 5)

III. Prehistory of Hegel's Philosophy of Nature

Shortly after Hegel's death in 1832, Karl Ludwig Michelet was charged with editing the material on the Philosophy of Nature for publication by "The Society of Friends of the Eternal", informally known as "the Hegel Society". As it happens, we know some details of the publication of this work from remarks Kierkegaard made at the time in one of his letters:

> We do not have much literary news except for Schelling's performance, which still continues unceasingly to maintain the interest of novelty. The second volume of Hegel's encyclopedia has just been published, and Michelet has taken the liberty of writing a preface without showing it to the [Hegel] Society. In it he attacks Schelling fairly sharply. This occurred just before Christmas. I had expected Schelling, who is very polemical in his lectures, to drop a few remarks about him, but this has not happened. Schelling's position is not a comfortable one. He has become involved with Court interests, which makes his conduct rather detested and is, of course, as is every external consideration, detrimental at all times. The Hegelians are fanning the flames. Schelling looks as sour as a vinegar brewer. (Kierkegaard 118, letter of January 8, 1842, to P. J. Sprang)

Kierkegaard here briefly describes the situation immediately before and after Michelet published the first edited version of Hegel's Philosophy of Nature. Until this point, Hegel's Philosophy of Nature had only been published in the terse-to-the-point-of-unreadable format that Hegel originally wrote the paragraphs of his Encyclopedia in, and so was unavailable to anyone who had not personally attended Hegel's lectures on the subject. Michelet (in keeping with the general editorial policy of the Hegel Society) incorporated huge amounts of material from lecture notes,

including Hegel's own notes, into his edition of the work, greatly expanding the length and intelligibility of it.

The Hegel Society began their work shortly after Hegel's death in 1831; the Philosophy of Nature was one of the later volumes to get published, showing its relative neglect – as does the fact that Michelet's preface was not presented to the Society before being printed. The broader circumstances of the Hegel Society and the posthumous publication of Hegel's lectures are thus not the only context in which Michelet's preface to the Philosophy of Nature should be understood. Michelet had a narrower, more immediate, goal than introducing Hegel's lectures to the reading public: he wanted first to fight against Schelling, who had now taken up a post in Berlin and begun self-consciously attacking Hegelian influences in philosophy. As Kierkegaard mentions, this was "involved with Court interests, which makes his conduct rather detested"; Schelling was to a significant extent combating Hegel because the state regarded it as in their interest to have Hegelianism combatted.[174] Schelling, at least as far as Kiekegaard could tell, simply ignored Michelet's criticisms, going about his business as if Michelet's preface had never been written.

Kierkegaard's description of Michelet's preface as having "fairly sharp" attacks on Schelling is surprising to a modern reader of it; Michelet rather appears to be making every effort to sway Schelling to Hegel's side, and to show that Hegel's Philosophy of Nature is really something Schelling should feel sympathy for. Michelet begins his preface to this volume of Hegel's *Werke* with a quotation from Schelling, who Michelet describes as "the man who really

[174]Engel's anti-Schellingian pamphlet *Schelling and Revelation: Critique of the Latest Attempt of Reaction Against the Free Philosophy* makes many amusing and incisive criticisms of Schelling's attempts to rebut Hegel; see (Engels 1842).

planned the revival of the Philosophy of Nature" (PN I 179); Schelling and Hegel are called by Michelet "the divine twins of modern science" (PN I 179), and it is their friendship in Jena which Michelet credits with Hegel's systematic success in later years. Given Kierkegaard's testimony that (to a contemporary reader) Michelet's preface read as "attacking Schelling fairly sharply", it seems clear what Michelet was doing with this effusive praise of Schelling: attempting to flatter Schelling enough to obscure the fact that Schelling was presently a thorn in the side of Hegelianism, and to perhaps convince him to lay down his arms and cease lecturing against Hegel. But this effort failed; Schelling continued railing against Hegel and his influence until he finally ceased public lecturing after a copyright dispute in 1845.

From the earliest possible moment, then, Hegel's "Philosophy of Nature" has been assimilated to Schelling's efforts under the same name, in part because of considerations external to Hegel's text. I shall argue that this assimilation has greatly distorted our understanding of Hegel's aims in the Philosophy of Nature: contrary to what readers since Michelet have believed, Hegel's Philosophy of Nature is a very different kind of project than Schelling's. Schelling, following Kant's ambitions in his Metaphysical Foundations of Natural Science, wished to produce a system of nature *a priori*[175] – his apparent distance from Kant is owed to a disagreement over how much of natural science can be reproduced in this way, not over what the

[175]There are complications with speaking of Schelling in this way, though I think it captures the original motivation he shared with Kant. See (Rand 2006) and (Nassar 2013 201). I disagree with Beiser's claim that "Hegel, like Schelling, did not accept the Kantian distinction between *a priori* and *a posteriori* judgments" (Beiser 2006 109). As Rand documented, Schelling used these terms in various ways at different points in his corpus, while Hegel eschewed them, so it is misleading to say that Hegel rejected this distinction in the way that Schelling did. In his late *Philosophy of Revelation* Schelling described his approach throughout his career as "aprioristic empiricism" (see Grant 5); the *a priori* is not important to Hegel's self-conception in this way.

basic project of a "metaphysics of nature" should be. Kant clearly had a self-standing interest in proving the *a priori* necessity of Newtonian physics as an account of nature; the second part of his Prolegomena is explicitly devoted to the question of how a natural science of just this sort, possessing apodictic certainty, is possible. Schelling I think is best read as sharing this Kantian interest, but with a broader[176] sense of what sort of science should be vindicated in this way, and a less developed sense of how to go about vindicating it in a rigorously *a priori* fashion. Hegel does not share this interest at all. For Hegel the natural sciences (and they are science*s* for Hegel, in the plural) are forever subject to revision and improvement in light of new discoveries; he simply does not try to show for any part of natural science that it possessed the kind of apodictic certainty that the second part of Kant's Prolegomena tried to vindicate for Newton's physics.[177] But if Hegel's "Philosophy of Nature" is not the sort of project shared by Kant's Metaphysical Foundation of Natural Science and Schelling's various writings on *Naturphilosophie*, then what sort of project is it?

A short answer can be given by looking at the Philosophy of Nature's place in Hegel's Encyclopedia of the Philosophical Sciences: For Hegel, the Philosophy of Nature is what goes between the Logic and the Philosophy of Spirit; it is of interest to him because it plays a bridging

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[176]Schelling can fruitfully be compared with the Kant of the Opus Postumum, on the reading given by Michael Friedman in (Friedman 1992). (Friedman 2006) claims that Schelling's revisions of Kant's dynamics were important for Oersted's discovery of electromagnetism. But see (Christensen 2013) p.657ff. for detailed criticisms of Friedman's account of Oersted's relationship to Schelling and to *Naturphilosophie* more broadly.

[177]When Hegel seems to indulge in this sort of necessity-rhetoric, context always makes it clear that he can't mean by it what Kant had. See above on Hegel's so-called "proofs" of Kepler's laws of planetary motion, which are said to be "necessary" despite being known to be false.

role. To be sure, each of Kant, Schelling, and Hegel were concerned in their philosophies with the relationship between mind and nature (in the various senses that this relationship has had in modern philosophy), but I think Hegel is anomalous in this group for how deeply worries about "the place of mind in nature" motivates his discussing natural science *at all*. For someone like Descartes or Kant, puzzles about "the place of mind in nature" arise because we seem to have two independently attractive accounts, one of mind (as thinking thing, as object of inner sense) and one of nature (as extended thing, as object of outer sense) and find on reflection that we don't know how to relate these two accounts to each other. But for Hegel we do not have even a single satisfying account that we begin with, let alone multiple ones: we start our account of nature from a sense of alienated dissatisfaction on its own. Kant was impressed enough by the supposed apodictic certainty of Newtonian physics to puzzle over how such an apodictic natural science could be possible; Hegel simply didn't view any of the natural sciences as apodictic in this way. Hegel was fallibilistic about the natural sciences, open to the possibility that future developments might overturn our current theories, and so when he is concerned with "the place of mind in nature" he is not concerned with finding a space for a free thinking thing in a deterministic extended world, or anything of that sort, which is merely an attempt to reconcile various scientific accounts of different objects. Hegel's concerns with mind and nature go deeper into why nature is a problem for us; this is why he claims to be dealing with a topic with ancient roots, and not one that arose with the "scientific revolution" and its "disenchantment of nature".

To put it provocatively, Hegel has a "Philosophy of Nature" despite his distaste for its subject matter; Kant and Schelling out of love for it. Kant was famously filled with awe at the "starry heavens above"; Hegel notoriously scoffed at them as "a great gleaming leprosy in the

sky".[178] Keeping this contrast between Kant and Hegel in mind leads to a very different understanding of what Hegel is up to in his "Philosophy of Nature".

I will now discuss Michelet's foreword to the published Philosophy of Nature in more detail. It will be clear that as Michelet describes it, the Philosophy of Nature is a project of the sort Kreines and Förster[179] take it to be: an avowedly metaphysical enterprise that takes its inspiration from Goethe and Schelling in expanding on Kant's Metaphysical Foundations to incorporate post- and anti-Newtonian scientific data. As an alternative to this view of the work, I will show that Hegel's interest in the Philosophy of Nature lies in how consideration of the problem of nature leads us towards an appreciation of the true relationship between spirit and nature: to use some Hegelian slogans, thinking about the problem of nature leads us to realize that spirit arises out of nature as its own product; that spirit is at home with itself in its other; that spirit is the *absolute prius* of nature.[180] These sorts of gnomic utterances have been very usefully elucidated by so-called "non-metaphysical" interpreters of Hegel such as Robert Pippin and Terry Pinkard; in this chapter I will argue that a proper understanding of Hegel's project in the Philosophy of Nature supports their reading against the Schellingian-metaphysical reading exemplified by Kreines, Förster, and Houlgate. The more clearly we understand Hegel's distance from Schelling in the Philosophy of Nature, the clearer his affinity for the more pragmatistic readings of Pippin and Pinkard will appear. I will argue it is only the neglect of the logic of Ideas

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[178]See Chapter 3, footnote 10, above.

[179]See Chapters 2 and 3 for my discussions of Kreines, and Chapter 4 for my discussion of Förster.

[180]For a relatively focused discussion of just such slogans as these, see the opening section of the Philosophy of Spirit, "On What Spirit Is", at (PS§381-4 8-20).

in Hegel that has prevented Pippin and Pinkard from appropriating more of Hegel's Philosophy of Nature for their own purposes.

IV. Michelet's Problematic Preface

It is striking, as soon as one begins reading Hegel's Philosophy of Nature, how defensive Hegel is about the enterprise. Hegel's first sentences, printed as a *Zusatz* in the "Introduction" to the work, read as follows: "It can *perhaps* be said that philosophy, in our time, enjoys no particular favor or affection.... It may certainly be accepted as *indisputably* true however, that the *philosophy of nature* in particular is suffering from a very considerable lack of favor." (PN IntroductionZ 191, emphases in original) When Hegel begins to lecture on the "Philosophy of Nature", then, he knows he is lecturing on a topic that is in bad shape. Hegel blames the Philosophy of Nature itself for its reputation:

> Crude empiricism and travestied thought-forms, capriciousness of fancy and the flattest methods of proceeding according to superficial analogy, have been mixed into a complete chaos, and this stew has been served up as the Idea, reason, science, divine perception (*Erkennen*). A complete lack of system and scientific method has been hailed as the very peak of scientific accomplishment. It is charlantry such as this, and Schelling's philosophy is a prime example of it, that has brought the Philosophy of Nature into disrepute." (PN IntroductionZ 191-2)

It is all the more remarkable, in view of how the first page of Hegel's text reads, that Michelet began his "Foreword" to this volume with an obscure quotation from Schelling: "To philosophize about nature is to create nature."[181] Michelet notes that

> One could regard this statement of *Schelling's* as presumptuous, and take it as evidence of the self-deification with which philosophy is so often charged at present. The poet says

[181]The quotation is from Schelling's "First Outline", (Schelling 2004 14).

> that it is the concern of philosophy 'to think again the great thoughts of the creation'[182] however, and if we express the thought in this way, it seems to be less outrageous. What in fact can be our object in philosophizing about nature, if it is not to reproduce its intelligible essence or generative ideas by thinking them forth from our spiritual inwardness? (PNI 179)

This is clearly meant as a rhetorical question, but it is worth asking seriously: What other purpose could Hegel's Philosophy of Nature be serving?

To answer this, it is helpful to look at how Michelet himself understands the distinctiveness of the Philosophy of Nature, as opposed to ordinary natural science. In his "Preface", Michelet notes that the Philosophy of Nature relies upon experience, and so upon the discoveries of natural science, for its material: "One cannot deny of course that philosophy of nature would never be able to think about nature unless it could draw upon experience, but experiences are in no way conducive to the discovery of ideas, unless those ideas flow from an inner source." (PN I 180) This use of experience "unconducive to the discovery of ideas" is characterized as "the continuous and unorderly accumulation of empirical *data*" and "the continual hoarding of fresh discoveries" (PN I 180). This Baconian sort of empiricism is noted to be endless and unsatisfying, as Goethe had already observed; the mere tabulation of facts can never satisfy our intellectual needs, can never reveal to us nature's secrets:

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[182]According to Petry (PN I:285) the reference here is to Goethe. The quoted line clearly resembles the line popularly attributed to Kepler, that he was only "thinking God's thoughts after him" (which I have been unable to track down, and which may be apocryphal) – but Kepler was no poet and (if the line is his) was describing work he had already accomplished, not work to be done by philosophers after him. A cursory search on Google Books shows a great many attributions of this quote to "Hegel" or to "Hegelians", or as a gloss on Hegelianism in general; see (Oman 247), (Mansel 278), and (McGosh and Dickie 514). Michelet's clear attribution of it to a poet has largely gone missing, and I have only found Petry giving the correct citation in the English literature when discussing Hegel (PN I 285).

> Yet this continual hoarding of fresh discoveries must be motivated by the fundamental assumption that there is a final result to be reached, and that at some time or another there will be a breakthrough from the phenomena to the essence of nature. As an excuse for the perpetual postponement of this, it is always pointed out that everything has not yet been discovered, – as if the goal which research of this kind has before it were not being continually shifted into the distance, for there is no end to what may be discovered. It is not surprising therefore, that when a Philosophy of Nature also enters the field, and attempts, as it must, to present the idea of the whole, it is passed by with a shrug of the shoulders, and a commiserating smile. (PN I 180)

As with Goethe in "The Experiment as Mediator", Michelet opposes an empiricist approach to science to one which can reveal "the essence of nature" by consideration of "the idea of the whole". The problem the Philosophy of Nature aims at remedying, on this view, cannot be one that might be solved by the discovery of some new empirical fact; the trouble is about how the facts we are already (in some sense) familiar with are organized.[183] As Michelet presents it, the remedy to this problem of organization in the Philosophy of Nature takes two steps. First philosophy "deduces" a sequence via "dialectical" thought, and then phenomena are pegged onto the sequence so "deduced":

> Philosophy certainly does not make an immediate deduction of the shapes of nature as such, it merely deduces certain of the thought-relationships characteristic of nature, and then discovers the intuitions which correspond to them in the sphere of natural phenomena. [...] Only the dialectical development of the Ideas themselves can decide where intuitions such as space and time should be placed however, and therefore what general order should be adopted; for it would be preposterous to assert that the graded

[183]Beiser agrees with this view: "First, Hegel never held that the conceptual method of *Naturphilosophie* should be a replacement for observation and experiment; he understood it as a method for organizing and systematizing the results of the empirical sciences, so that it presupposed their concrete results." (Beiser 2008 108)

> series of forms had also been created out of nature, as it is certain that they are all in nature together. (PN I 184)

This "dialectical derivation of Ideas" is the production of a sequence of general features of nature (such as light, water, and space); Michelet notes that nature herself does not provide us with any such list, but he thinks the Philosophy of Nature can make a special such list. Once such a list has been "deduced" the philosopher of nature is then supposed to find phenomena to pin to the various entries on the list. But because these phenomena are always empirical, sometimes we might find that we have an item on our list with no obvious phenomenon to associate with it:

> If an Idea is derived *a priori*, and no corresponding intuition is forthcoming, we may proceed in either of two ways. To a certain extent we may be justified in assuming that the empty place contains a phenomenon which has not yet been discovered empirically, but although Oken frequently made use of this expedient, it is not to be recommended. The other procedure open to us is to throw the thought back into the melting-pot of the dialectic, and then to raise it once more from the productive mine of reason into the daylight of consciousness, for there is every possibility that despite the universally creative thought which slumbers in every breast, and which can guide us along the correct path, our idiosyncrasies will have caused us to go astray in our thinking. (PN I 184)

According to Michelet, the "Philosophy of Nature"[184] has both an *a priori* and an *a posteriori* aspect. *A priori* the philosopher derives a sequence of Ideas with the aid of "the universally creative thought which slumbers in every breast"; *a posteriori* the publications of natural scientists are then used to illustrate what has been derived, and to show that this is in fact the order of nature empirically familiar to us. As Michelet notes, this raises the possibility that a philosopher of nature (such as Oken) could derive *a priori* an "Idea" to which nothing in

[184]Note that here Michelet is discussing a project common to Hegel and the Schellingian naturalist Lorenz Oken, and not only found in Hegel's book.

experience corresponds, and could use this "Idea" to assert *a priori* that experience must sooner or later present us with a phenomenon to match it. Though this procedure is said to be legitimate, given the logic of how Michelet thinks the "Philosophy of Nature" operates, he cautions that if we think we can do this we are more likely to have simply made a mistake due to personal idiosyncrasy. But this caution comes too late: if Michelet is correct in how he presents the procedure of the "Philosophy of Nature", then any philosopher of nature has the power to proceed from an *a priori* grasp of the essence of nature to the foreknowledge of what empirical science must sooner or later discover. For example, after saying that it is light which keeps the mixture of nitrogen and oxygen ("azotic" and "vital" airs) in ordinary air in "constant alteration" and so prevents their separation, Schelling says that "Beyond doubt, experiments would confirm this conjecture." (IPN 89); this is the kind of speculative boldness which is in principle legitimate for a philosopher of nature, on Michelet's view, though he is wary of it in practice. (Schelling does not describe the experiments he has in mind.)

That the "essence of nature" has been disclosed to the fortunate few through the inwardness of pure thinking is something Michelet takes to be shown by the achievements of inquirers like Goethe; he is also fully confident that the multitude of empirical phenomena will eventually be shown to be dialectically orderable just as his "Philosophy of Nature" urges them to be:

> I am therefore convinced that in its purest speculative development, thought will coincide most completely with the results of experience, and on the other hand, that the full capabilities of a mature sense of nature based on experience will yield nothing to supersede an insight into the embodiment of Ideas. It seems to me therefore, that Goethe and Hegel are the two geniuses destined to direct the course of the speculative physics of

> the future, for it is these two men who have pointed the way towards the reconciliation of speculation with experience. (PN I 185)

For Michelet, as for Schelling, the Philosophy of Nature in a strict sense develops independently of experience; experience is the touchstone[185] of the truth of the Philosophy of Nature, but the Philosophy of Nature does not develop by the progressive testing and emendation of empirical theories: "It is literally true therefore that *Hegel's* Philosophy of Nature creates the entire system of nature's productive Ideas out of its own freedom." (PN I 184)

V. Michelet's Method Considered

Much of the content of Philosophy of Nature is simply empirical, reports of the state of the art as Hegel understood the natural sciences of his day. Michelet provides the obvious explanation for why so many of these verbatim reports and mere summaries are included in the work:

> The considerable range of empirical material [the Encyclopedia] covers is not taken for granted, and is often presented with a certain predilection. This is by no means out of place in academic discourses of this kind however, for although the professionals are sufficiently aware of the facts, *Hegel* was not always able to assume that this basic knowledge was always present in the minds of his students, and as it was indispensable for the understanding of his ideas, he was forced to present it to them. (Michelet's preface to PN, I:89)

But it can appear puzzling why this material needs to be present to the minds of Hegel's students. Given Michelet's own understanding of Hegel's method in Philosophy of Nature, discussed in the previous section, it can seem that the philosopher ought to be able to produce the categories

[185]To be sure, Hegel sometimes speaks this way. I will give a reading of one such passage later, to show that it does not discredit my approach.

of the "Philosophy of Nature" out of pure thinking, *a priori*, and then needs to look to the empirical sciences only for confirmation of what is already known. But if this material could be produced out of pure thought by the power of the dialectic, why could Hegel not simply do this for his students, and save himself the trouble of rehearsing "this basic knowledge" for them?

Before I articulate my own answer to this question, I want to do justice to Michelet's interpretation: he did after all attend Hegel's lectures personally, and was the man selected to edit the Philosophy of Nature lecture materials into an intelligible book. Michelet seems to me to have focused on a few early passages from these lectures and generalized them to be a method Hegel supposedly used throughout the work; Houlgate has done the same. So I will first lay out how Michelet's reading handles some representative passages from early in the work, and then how I think they are better read.

The first passage in Hegel I want to look at is from the Introduction to Philosophy of Nature:

> Since nature is the Idea in the form of otherness, according to the concept of the Idea, the Idea is not within it as it is in and for itself, although nature is nevertheless one of the modes in which the Idea manifests itself, and in which it must come forth. Secondly, it has to be established and demonstrated that this mode of the Idea is nature. In order to do this, a comparison will subsequently have to be made, to see if the definition corresponds to representation. In other respects however, philosophy need not concern itself with representation, nor undertake the tasks it carries out; although such thinking is conformable however, there must, in general, be an agreement between these two aspects. (PN §247Z I:206, translation modified; Petry has "ordinary thinking" for *Vorstellung* here, which gets at something of the contrast between "representation" and "concept" Hegel is drawing, but I think is both more and less precise than Hegel intends.)

In this passage, Hegel seems to say that Philosophy of Nature will have two tasks. First, it must

be seen that "the Idea in the form of otherness" is a necessary part of comprehending "the Idea", and second it must be shown "that this mode of the Idea is nature." This latter task is to be accomplished by taking up everyday and natural-scientific "representations" of aspects of nature and comparing them to the free developments of philosophical thought in order "to see if the definition corresponds to the representation." These "definitions" themselves however are produced by pure thinking, and are not derived from everyday "representations".

The development of the first category of Philosophy of Nature, "Space", seems to bear Michelet's reading out. After the close of Science of Logic, we know that thought has an object that it is not immediately identical with, that its theoretical and practical knowledge must labor to come to grips with in order to further develop the Ideas of the True and the Good which thinking knows itself to partly realize.[186] This other-than-thought is something thought knows is needed for the mere possibility of thinking, but so far all that is determined about it is that it is other than thought, is not discussed in the Logic. But it must be more than just this; this other-than-thought

[186]This material I present merely dogmatically; it deserves much more detailed consideration. The rough idea here is that as theoretical knowing knows itself to be theoretical knowing just in the course of trying to come to grips with any object, it is already partly true knowledge: from the start of inquiry, I at least know I am engaged in inquiry, and so begin from a grasp of truth. Similarly, in any action I have a practical knowledge of myself as good just because I practically know that I am acting: things ought to be brought about as practical reason bids them to be, and in acting at all I am responding to this demand, however inadequately I may do so. That I actualize rational agency at all is good, and I have a practical knowledge of this; I begin even the worst actions from a grasp of goodness. My agency as a mere thinker is thus world-involving and value-laden from the beginning, and is always already partly succeeding: this kernel of eternal success is the "Absolute Idea" with which the Logic closes, the self-knowledge of thought as being as it ought to be which all inquiry and action develop. But this kernel can only be true and good if inquiry and action are in fact underway; there thus must be something other than this thin self-knowledge of thought as an object of our knowledge if our supposed self-knowledge is not to be falsified and shown to be bad, erroneous in both theory and practice.

is required only because theoretical and practical knowledge concern themselves with something other than themselves, and so this other-than-thought must be knowable if it is to be what thought requires. In a way familiar to anyone who has read the "Sense Certainty" chapter of Phenomenology of Spirit, Hegel argues in the section of Philosophy of Nature on "Space" that mere "heres" fail to be such possible objects of knowledge; the other-than-thought which our knowledge is concerned with must have determinacy within itself for us to come to know it. If we suppose that what is other-than-thought shall come to be known just as "what is different from thought", we represent the object of thought and thought itself as being distinguished in no *determinate* way, but as being different just in being different. The object in this way has as the only determination that we might come to know about it the sheer lack of determination; it is a bare "not that" which thought distinguishes itself from. Hegel claims that this determination of the object of thought as merely a "not that" is where we will begin if we try to think of the bare minimum of what nature might be: similarly to how Science of Logic begins with "*Being, pure being*, without any further determination" (WdL 82) the Philosophy of Nature begins with a sheer otherness to thought, without (yet) any further determinations. Hegel's way of introducing this, in the first sentence of the first subsection of the Philosophy of Nature proper (after its long introductions) reads as follows: "The primary or immediate determination of nature is the abstract *universality of its self-externality*, its unmediated difference, i.e., space." (PN §254 I:223) Michelet treats this as the first development of a pure category in the Philosophy of Nature, the pure category of "Space". In the *Zusatz* to this paragraph Hegel then indeed seems to compare this category with our ordinary notion of space, just as Michelet says his general method requires:

> As it is our procedure to ask how the thought which has been established as a necessity by means of the concept looks in our representation, the further requirement is that the intuition of space shall correspond to the thought of pure self-externality. Even if we should deceive ourselves in this respect, this would in no way effect the truth of our thought. In the empirical sciences on the other hand, the opposite procedure is adopted; the empirical intuition of space comes first, and is then followed by the thought of space. (PN §254Z I:224, translation modified)

As Michelet reads this passage, here is what Hegel is saying in it: "We have so far developed the pure category of space as "the thought of self-externality." We will now go on compare this pure thought to our intuition of space, how space is ordinarily represented. But if we think that this intuition does not match our pure thought, that is not a problem for our pure thought. In the empirical sciences, if a thought about space did not agree with our empirical intuition of space, then we would have to reject the thought; but we are not doing empirical science but rather Philosophy of Nature, and so this cannot happen. The pure thought retains its validity even if experience seems to falsify it." Hegel is then taken by Michelet to use this same method for all of the other categories of Philosophy of Nature.

Setting aside the outlandish metaphysical pretensions such a project would have to claim for itself, this procedure does not seem to perfectly fit with Hegel's texts. Though Hegel does explicitly set "the intuition of space" beside "the thought of pure self-externality" in this section, we do not find such explicit comparisons in the later sections of Philosophy of Nature. Michelet can claim that they are implicit or merely not flagged as clearly as they are in the section on "Space", but it is a *prima facie* difficulty that his reading must do this.

On my reading, Hegel has an explicit contrast in this section because of a peculiarity of his treatment of "Space" in particular: Hegel is aware that it can seem that mere "self-externality"

is not enough to be thinking of space, and he should not have called it by that name. That a difference is entirely abstract and indeterminate does not seem to show that it is a *spatial* difference; spatial differences are differences of place or of shape, and space has a dimensionality to it. But Hegel does not get around to talking about shape, as "a form of the spatial assemblage of material being" until much later, in §310 of the second volume of Philosophy of Nature (p.96). There, we are told that owing to its shape "The body has a concealed and tacit geometer within it" (PN §310 II:96) that provides it with its magnitude and the exclusion of other bodies from the place it is at. For Hegel, these topics are properly handled in that later section, under the general heading of "Physics of Total Individuality", and not in Mechanics. In the opening section on "Space", Hegel does not want to talk about filled space or regions of space; he is trying to discuss something much more abstract, but still empirical – still something our theoretical and practical knowledge grapple with – the simple foreignness of natural beings, their being "out there". The passage quoted above in defense of Michelet's reading continues as follows:

> In order to prove that space accords with our thought, we have to compare the representation of space with the determination of our concept. The content of space has nothing to do with space itself, in which various "heres" are juxtaposed without impinging upon one another. "Here" is not yet place, it is merely the possibility of place. The "heres" are completely identical, and this abstract plurality, which has no true interruption and limit, is the precise constitution of externality. (PN §254Z I:224, translation modified.)

As the fuller context should make clear, the reading of this passage I gave on behalf of Michelet is not the best reading of it.

What I take Hegel to be saying is not that in Philosophy of Nature we first develop pure categories out of mere thought and then compare them with experience; this would be to separate

the Philosophy of Nature into two parts, an *a priori* part and an empirical part. On my reading, by contrast, we are presenting materials taken from experience (such as space) in such a way that we can understand all of these materials as objects of our thought. We need to "ask how the thought which has been established as a necessity by means of the concept looks in our representation" (PN §254Z I:224) not so that these everyday representations can be hung on so many conceptual coat-hooks, but so that we can understand what this thought is to begin with. We do not have an already-understood "pure category" that we are comparing with an independent representation, but we are developing our thinking *through* grappling with experience. The sense in which Hegel is correct to say that "it would in no way affect the truth of our thought" if we found a mismatch between "the thought of pure self-externality" and "the empirical intuition of space" concerns the unequal status he has with regard to his students: *Hegel* knows, but his students do not, that the early development of "Space" will eventually be complemented with a treatment of "Shape", the sort of body that fills space; Hegel knows that this early section of the Philosophy of Nature is dealing with nature very abstractly, and that if he fails to do full justice to our experience of space in this section, he will compensate for that later. It will not affect the correctness of this early, abstract treatment if there are empirical facts about space that he has neglected; they can be dealt with later on, once more resources are in play for making sense of them. Hegel contrasts this procedure with that of "the empirical sciences" in which "the empirical intuition of space comes first, and is then followed by the thought of space", but Hegel cannot mean this contrast to show that the Philosophy of Nature begins with the thought of space and then follows it with the empirical intuition of space. As Hegel says, "It is not only that philosophy must accord with the experience nature gives rise to; in its formation and in its development, philosophic science

presupposes and is conditioned by empirical physics." (PN §246R I:197) There can be no development of a "thought of pure self-externality" (i.e., space) that is not "conditioned by empirical physics", though we need to avoid positing a dualism of empirical science and Philosophy of Nature if Hegel is to be understood. On my reading, if we at any point are not tarrying with "how things look in our representations", the everyday and natural-scientific objects that we seem to have presented to us as objects for knowledge, then we will have ceased to be grappling with *nature*, and will have abandoned the project of the Philosophy of Nature; but we likewise are always dealing with objects of our thought, and need to keep that mind. Even the most abstract description of these phenomena must be recognized as a description of these ordinary empirical appearances if what Hegel is doing is to be understood. If we are going to make sense of the objects of our theoretical and practical knowledge, which include ourselves within them, we must deal with what thought has actually found about these objects. Michelet's two-part process lets the empirical sciences inform the development of the dialectic only indirectly, by suggesting topics that the Philosophy of Nature should find a way of establishing *a priori*; as I read Hegel, this is giving the empirical sciences too little credit for how much thinking is at work in them.

The natural sciences themselves have already done quite a lot of the work of thinking through nature, as Hegel says:

> the empirical sciences do not stop at the perception of *single instances* of appearance; but through thinking they have prepared the material for philosophy by finding universal determinations, genera, and laws. In this way they prepare the content of what is particular so that it can be taken up into philosophy. And, on the other hand, they contain the invitation for thinking, to advance to these concrete determinations. (EL§12&12Z 37)

The presentation of scientific material is thus a necessary moment of the Philosophy of Nature not so that this material can serve as a touchstone or a prolegomenon to the Philosophy of Nature, but because they are its vital content. Hegel says that philosophy only gives this content a different "shape":

> philosophy does owe its development to the empirical sciences, but it gives to their content the fully essential shape of the *freedom* of thinking (or of what is *a priori*) as well as the *validation* of *necessity* (instead of the content being warranted because it is simply found to be present, and because it is a fact of experience). (EL§12&12Z 37)

Hegel says that the content of the empirical sciences is given "the shape of the freedom of thinking" and "the validation of necessity" by philosophy. On my reading, this "validation of necessity" cannot, as it is in Kant, take the form of showing some part of the natural sciences to be *a priori* in the sense of certain independently of experience; Hegel is clear that this content is owed to the development of the sciences, and so could not be brought forward without them. But Hegel does want to make the contents of the empirical sciences have a validity for us which is not simply an agglomeration of "facts of experience": He wants to bring us to understand the contents of the natural sciences as all hanging together, not "simply found to be present" but actively fitting together, so that we can speak of a united "Nature" as what the different natural sciences all grapple with.[187] In this way we might be able to run through these contents with "the

[187]In this respect, Hegel can be seen in Philosophy of Nature as engaged in a more familiar project of harmonizing the various natural sciences with one another. But on my reading, the way he finally unites them, by distinguishing between "nature" and "spirit", sharply distinguishes Hegel's approach to this topic from Kant's or from a contemporary naturalist's: rather than finding that the natural sciences all give us satisfactory accounts of the objects of our knowledge, or that one privileged natural science does so (with other sciences being reduced to or build atop this one), what unites the natural sciences as all sciences of *nature* is for Hegel just their unsatisfactoriness, their inability to resolve the riddle of nature for us.

freedom of thinking", making sense of them all without stumbling upon arbitrary surds. The empirical sciences already do this to some degree by uniting phenomena under laws and species and other generalities; the Philosophy of Nature takes up the further task of saying how these different ways of unifying phenomena hang together.

VI. Hegel and Schelling Again

Michelet claims that Schelling has failed to recognize that this system of Ideas is the one and only true system of "Philosophy of Nature" because "*Schelling's* 'inner nature' causes him to feel constrained and embarrassed by the strictly scientific procedure of a dialectical method." (PN I 190) It is this psychological tick of Schelling's which Michelet blames for his "relapse into a philosophy of revelation" (PNI 190) after he ceased to write on the "Philosophy of Nature". But as Michelet's publication of Hegel's Philosophy of Nature coincided with Schelling's arrival in Berlin, Michelet welcomes him with it: "The man who planned the Philosophy of Nature, but was unable to do more than lay the foundations, will find the building completed in this work. In this book he may hail the genius of one who 'later became'[188] his friend, for he is the father of the science developed here, and he of all men living is most to be honored for it." (PN I 189) From the start to the finish of Michelet's "Preface", Hegel's Philosophy of Nature is presented as simply the more rigorous and perfected version of what Schelling had first written about in his Ideas for a Philosophy of Nature.

It is then very jarring to read, on the immediately following pages of Philosophy of

[188]Michelet here quotes from Schelling's first lecture on the philosophy of revelation, as Petry notes (PNI 290). It is strange to read Schelling claim that Hegel "later" became his friend, given that he was Hegel's roommate in Tubingen (with Hölderlin) long before he wrote Ideas for a Philosophy of Nature, but Schelling seems to have publically disowned that early friendship after Hegel's death.

Nature, after Michelet's preface ends and his edition of Hegel's text begins, Hegel mentioning his own view of the fate of the Philosophy of Nature *a la* Schelling:

> Intense stimulation has had the effect that one might have expected, and looking at the way in which the *Idea of the philosophy of nature* has exhibited itself in modern times, one might say that in the first gratification which its discovery has afforded, it has been grasped by fumbling hands instead of being wooed by active reason, and that it is by its suitors rather than by its detractors that it has been done to death. For the most part it has been variously transformed into an external formalism, and perverted into a conceptless instrument for superficiality of thought and fantasizing imagination. The details of the extravaganza into which death-struck forms of the Idea have been perverted do not concern me here. Some years ago I expressed myself more fully on the subject in the preface to the 'Phenomenology of Spirit'. It need cause no surprise that the more thoughtful view of nature, in which perception has been guided by the Idea, as well as the crass empiricism of the external abstract understanding, should have shunned such a procedure, which is as grotesque as it is pretentious. (PN IntroductionZ 191, translation modified)

This passage is immediately followed by the one I quoted at the start of section IV, where Hegel refers to Schelling's philosophy as "charlantry". What is most noteworthy for my purposes is that where Michelet's "Preface" opposed two approaches to nature, a caricatured "empiricism" and the Philosophy of Nature, Hegel has *three*: Schellingian "charlantry", "crass empiricism", and *his own view*: "the more thoughtful view of nature, in which perception has been guided by the Idea". Hegel goes on to introduce this "thoughtful view of nature", which is what he means when he speaks simply of "the" philosophy of nature:

> In the first place we find [the philosophy of nature] standing in a peculiar relationship to natural science in general, that is to say, to physics, natural history, and physiology. It is

> indeed physics, but *rational physics*, and it is at this point of rationality that we have to grasp it, and in particular to determine its relationship to physics. This procedure might appear to rest on a novel distinction. At first the philosophy of nature will tend to be regarded as a new science, and there is no doubt that in one sense it is. In another sense it is not, for it is as old as all observation of nature. It does not differ from this observation, and thus has traditions more ancient than those of physics,[189] which in Aristotle for example, is much closer to a Philosophy of Nature than it is today. It is only in recent times that the two have been separated. (PN IntroductionZ 193)

For Hegel, the Philosophy of Nature was not a brainchild of Schelling or Kant; it is as old as "all observation of nature", and Aristotle was already at work at it. What is new, in Hegel's view, is only that Philosophy of Nature and physics have now been sharply set apart from each other, with only the Philosophy of Nature considered to be (as in Schelling and Michelet) "the cognition of nature by means of thought". But this distinction is bogus, says Hegel; though physics likes to flatter itself (or humble itself) as a merely passive record of the facts vouchsafed

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[189]Hegel's text here is ambiguous: He could mean here that Aristotle's book Physics was closer to a philosophy of nature than contemporary physics. He could also mean, as might fit better with his general view of Aristotle, that Aristotle's overall approach to nature was closer to a Philosophy of Nature than contemporary natural science is. This would be to use "physics" *pars pro toto* to refer to all of natural science, as Hegel does later in the passage: his references to natural history and to physiology in addition to physics at the start of this passage seem *ad hoc*, with no importance attaching to whether or not he only mentions "physics" when discussing the body of natural science to which Philosophy of Nature is being related. A few pages later, Hegel explicitly tells us that "What is now called physics was formerly called natural philosophy" (PN §246 I: 196) which may seem to helpfully clarify things. But later on in the Philosophy of Nature, "physics" is the name for the middle stage between mechanics and organics: roughly, chemical phenomena. As often with Hegel, close attention to his terminology has limited usefulness; the truth of what he means by his words only shows up in the whole context, as he would assure us is how it must be.

to us by Nature, physics is actually no such thing: it is, and can only be, a "thinking cognition of nature", just as the Philosophy of Nature is. Hegel immediately goes on to note this kinship between his own project and ordinary natural science.

> The first thing to be noticed about this distinction between physics and the Philosophy of Nature and the mutual determination which exists between them, is that they are not so widely separated as they might seem to be at first. Physics and natural history are regarded as eminently empirical sciences, as belonging exclusively to observation and experience, and as therefore opposed to the philosophy of nature, the cognition of nature by means of thought. It has in the first instance to be pointed out however, that empirical physics contains much more thought than it will either realize or admit; that it is in fact better than it supposes, or if thought is considered to be a bad thing for it, that it is worse than it supposes. Physics and the philosophy of nature are therefore to be distinguished, not as perception and thought, but merely *by the nature and manner of their thought*. Both are a thinking cognition of nature. (PN IntroductionZ 193)

The Philosophy of Nature is as old as "all observation of nature" for Hegel because all observation is "theory-laden": in observing nature we test and develop our views as to how the world is by modification of our existing theories. We do not compare independently-developed "theories" with independently-available "observations", but rather make observations while developing theories and develop theories while making observations, two sides of a common coin. All observation is thus always already "a thinking cognition of nature."

Mindless staring at the heavens is not observation of them, and physics could not develop out of it; it is only once the progression of the heavens was noticed, and questions formulated

about how it happened and why, e.g., the sun and moon were irregularities in this progression that a science of the heavens began to develop. As Hegel puts the point, "If physics were based only on perceptions however, and perceptions were nothing but the evidence of the senses, the activity of a natural scientist would consist only of seeing, hearing, etc. so that animals would also be physicists. It is however a spirit, a thinking entity, which sees and hears etc." (PN §246Z 197-8) In both physics and the Philosophy of Nature, perception is not just an external "check" on conceptual thought's free spinning, but is an internal moment of thinking developing itself by its own standards. Being an "eminently empirical science" does not distinguish physics from Philosophy of Nature, for in both of them thought develops through itself alone. The "eminently empirical" observations and experience which are needed in physics only appear to be opposed to "cognition of nature by means of thought" because of a philosophical dualism of intuition and concept, of empirical content and conceptual scheme. Without this dualism, Philosophy of Nature cannot pretend to be a "merely" conceptual development independent of experience, an *a priori* philosophy opposed to the *a posteriori* natural sciences – or the conjunction of an *a priori* list of Ideas and an *a posteriori* sequence of phenomena. In both physics and Philosophy of Nature the *a priori*/*a posteriori* dualism is overcome by recognition of the collapse of "the dogma of conceptual scheme and empirical content": rather than being either perception or thinking, or some special combination of "perception" and "thinking" as independently intelligible elements in a complex, both physics and Philosophy of Nature are rightly characterized in the phrase Hegel uses for them: they are both "thoughtful perception".

But Hegel *does* want to somehow distinguish Philosophy of Nature from physics, for all they have in common; he does not, in Quine's lackadaisical way, claim that philosophy is simply

"continuous with" science (Quine 1995 281). Hegel is doing something different than empirical science in his Philosophy of Nature, though both are characterized by "thoughtful perception". He tells us that Philosophy of Nature and empirical physics are to be distinguished by "*the nature and manner of their thought*." But what does Hegel mean by this? What is the special manner in which we are to think about nature, when thinking about it as philosophers of nature? What does the Philosophy of Nature provide us with that physics does not give us by itself?

VII. The Question of Nature

Hegel begins to answer these questions by consideration of the question "What is nature?":

> This quest for *being* has a multiple meaning. It is merely the matter of a name if we ask, 'What sort of plant *is* this?' If we know the name, it may be a matter of perception. If for example I do not know what a box-compass is, I merely have to get someone to show me the instrument, and then I can say that I know. In the question 'What is this man?', '*is*' refers to his status, but this is not its meaning if we ask 'What is nature?' The meaning of this question, when we ask it because we want to know what the philosophy of nature is, is the object of our investigation. (PN IntroductionAZ 194)

In asking "What is nature?" we are not searching for a label, or for the bearer of a label, or for something conventional like a rank. The question has a deeper sense for us:

> What is nature? It is through the knowledge and the philosophy of nature that we propose to find the answer to this general question. We find nature before us as an enigma and a problem, the solution of which seems to both attract and repel us; it attracts us in that spirit has a presentiment of itself in nature; it repulses us in that nature is an alienation in which spirit does not find itself. From this arose Aristotle's dictum that philosophy has its origins in wonder. We begin to observe, and we collect data from the multifarious formations and laws of nature, which may be pursued for their own sake into endless

> detail in all directions; and because we can see no end to this procedure, it leaves us unsatisfied. What is more, despite all this wealth of knowledge, the question 'What is nature?' can always be asked and never completely answered. It remains a problem. (PN Introduction AZ 194)

Nature presents itself to us as Janus-faced: it is both just what we *are not*, what is opposed to us and foreign, and what we ourselves *seem to be*. This shows up most vividly when we consider ourselves as practical agents: "In the practical relationship which man establishes between himself and nature, he treats it as something immediate and external; he is himself an immediately external, and therefore sensuous individual, who is nevertheless also justified in acting as purpose in the face of natural situations." (PN §245 195) In action I cannot regard myself as simply continuous with the rest of nature, as though what I picked out as being "myself" was merely an idiosyncratic selection of one object out of many; in action the distinction between first-personal and third-personal reference is essential, and I must be able to think of myself *as* myself to reason practically.[190] But these different forms of reference are not different forms of referents; I can also refer to myself third-personally, and so can treat myself as just another item "out there" in nature, which someone else can know just as I know myself. It is not as if nature were a block of swiss cheese, with free agents forming mysterious holes in the natural order (perhaps curled inside pineal glands); as Hegel says, the distinction important for practice is between different ways of *treating* things, not between different *things*. As a practical agent, I treat nature, which I recognize myself to be a part of (for I too am "an immediately

[190]For some Hegelian reflections on this, see Sebastian Rödl's Self-Consciousness (Rödl 2007), especially chapter two. Anscombe's Intention (Anscombe 2000), with its defense of "practical knowledge" as distinct from "contemplative knowledge" , is largely oriented to the same theme.

external, and therefore sensuous individual"), as something I know myself to be justified in subjecting to my purposes: that which is, in a sense, just what I am I also regard as subject to me, a means to my ends.

But simply noting that we can treat natural items in different ways does not resolve the tension nature presents us with: nature continues to seem more alien than familiar; spirit has a "presentiment of itself in nature" but it "does not find itself" in nature. It is this tension that Hegel claims is at the root of natural science; it is because we want to resolve this enigma that "we collect data from the multifarious formations and laws of nature". Once begun, this project can take on a life of its own, and be pursued for its own sake *ad nauseam*: this scientific project provides us with a "wealth of knowledge", but leaves the original enigma always standing. In asking "What is nature?" physics goes on to ask more specific questions about more specific parts of nature, and develops itself into the various natural sciences. But when Philosophy of Nature asks "What is nature?" it keeps the question Hegel claims is more primordial in view: how can this alien realm be our own? How can nature, the spiritless mass disclosed by the natural sciences, be that in which we live and move and have our being?

VIII. The Idea of Nature Foreshadowed

This is a tension more recently made familiar by Wilfrid Sellars's contrast between the "manifest" and "scientific" images of man: we have images of ourselves as both essentially normative, rational beings, and as items in a law-bound causal order where norms and reasons are nowhere found.[191] It is to find a way to make sense of this dilemma that the philosophy of nature asks "What is nature?"

[191] See (Sellars 1963).

Hegel also puts the problem in terms of a dualism of subject and object: "Our aim is to grasp and comprehend nature however, to make it ours, so that it is not something beyond and alien to us. This is where the difficulty comes in. How are we as subjects to get over into the object?" (PN §246Z 198) This problem of subject and object is a paradigm of modern philosophy; Hegel also holds that the Philosophy of Nature is concerned with an ancient question: to grapple with the question "What is nature?" is also to ask "Why has God determined himself in order to create nature?" (PN §246Z 205) – why is there this Janus-faced object, nature, and not simply a spirit which is at home with itself in a tranquil eternity? Why are there contingent beings, and not only autonomous necessity? The modern discrepancy between the "manifest" and "scientific" images of man, in Hegel's view, is only the latest version of an old problem:

> The determination and the purpose of the philosophy of nature is therefore that spirit should find its own essence, its own counterpart, i.e., the Concept, within nature. The study of nature is therefore the liberation of nature, which is in itself reason; it is only through spirit however, that reason as such comes forth from nature into existence. Spirit has the certainty which Adam had when he beheld Eve, 'This is flesh of my flesh, this is bone of my bones.' Nature is, so to speak, the bride espoused by spirit. Is this certainty also truth however? (PN §246Z 204, translation modified)

Reason is in nature, and can be recognized there; this is metaphorically the certainty with which Adam first greeted Eve, who for all Adam knew could have been another of the animals which he was to name in the garden. Eve proved Adam's certainty to be truth; he found in her what he himself was (and Adam gives her a name like the other animals only after the Fall, and exile from Eden). But how are we to recognize reason in nature, raise our certainty that it must be there (for we are there) to truth and make it into knowledge? How is the philosophy of nature in

particular supposed to be of use in this?

Hegel's short answer for what the philosophy of nature has that makes its answer distinctive is: the Idea of nature, the unity of the thought of a reality external to thought with this reality itself. But Hegel is well aware that trying to begin the philosophy of nature with the Idea of nature is counterproductive:

> We could resort immediately to the philosophical Idea, and say that the philosophy of nature should provide us with the Idea of nature. To begin in this way might however be confusing. Our task is to grasp the Idea itself in its concreteness; and so to apprehend and bring together its different determinations; in order to take possession of the Idea, we therefore have to work through a series of determinations, by means of which the Idea first comes into being for us. (PN IntroAZ 194)

In presenting the philosophy of nature, Hegel knows from the start how his story will end; as it will end with the presentation of the Idea of nature as the totality of the moments of the Philosophy of Nature, he can tell us that is what will happen. But telling us this at the start doesn't show us that this is so: the Idea can only come into being *for us* through the presentation of its moments, and we can come to see that this is what we've been presented with only retrospectively. But this is enough to provide us with a schematic description of how Hegel aims to carry out the project of the Philosophy of Nature: by working through a series of determinations, the philosopher of nature is to come to grasp these determinations as having the unity of an Idea, and in grasping this Idea the philosopher of nature is to recognize themself as spirit in nature. This provides us with two criteria, a theoretical and a practical one, by which to judge any account of what the Philosophy of Nature is doing: the content of the whole needs to be intelligible as something called "the Idea of nature", and grasping this Ideas must do the

practical job of resolving the problem of nature, of showing what we are to do with the Janus-faced image it presents to us.

The apprehension of the Idea of nature serves a bridging function between the Science of Logic and Hegel's account of spirit proper, what the Encyclopedia calls "the Philosophy of Spirit"; the Logic leaves off with the demonstration that there must be a world external to the forms of logic, the "objectivity" of the Absolute Idea required by the subjective thinking of the Absolute Idea, and the account of spirit cannot proceed while we cannot understand how spirit might exist in this extralogical world. The Logic tells us that this extralogical world is thinkable; spirit is thinking within this world. To understand spirit as thinking this thinkable world from within it, we need an account of this world as it is so thought; only in this way can the circuit of Hegel's system be completed, an account properly be given of thought's thinking of itself, a demonstration that the Absolute Idea is Absolute Spirit and can be grasped by us as such. In Hegel's words: "The philosophy of nature itself belongs to this pathway of return, for it is the philosophy of nature which overcomes the division of nature and spirit, and renders to spirit the recognition of its essence in nature." (PN §247Z 205)

To attribute a bridging function to the philosophy of nature is not to diminish its importance, but to highlight it: if Hegel's aim in the Philosophy of Nature was to unfurl a grand metaphysical vision of the world for its own sake, as it has often been taken to be, or to show *a priori* the results of some of the natural sciences, it is unclear why he would have such an aim, or what good such metaphysical visions would do for anyone (apart from scratching the itches of certain sorts of imperial metaphysicians). Seeing the Philosophy of Nature in light of Hegel's central concern with our freedom as rational beings makes it clear why the project is important:

so long as nature stands as an enigma for us, our freedom is threatened, for we know that this enigmatic realm of nature is (somehow) that in which we live and move and have our being. The Philosophy of Nature, like the rest of Hegel's philosophy, is thus a contribution to the liberation of the human spirit.

IX. "Metaphysical" and "Non-Metaphysical" Readings of Hegelian Metaphysics

In emphasizing the respects in which Hegel's philosophy is a contribution to the liberation of the human spirit, I am allying myself with readers who emphasize the social, pragmatist, and modernist elements in Hegel, as opposed to reading him as a revitalizer of precritical Neoplatonistic metaphysics. Starting in Hegel's own lifetime, there have been strong disagreements over how to interpret him; the famous 19th century quarrels between "left" and "right" Hegelians have many contemporary descendants. Frederick Beiser gives a useful taxonomy in his introduction to The Cambridge Companion to Hegel and Nineteenth Century Philosophy: there is a traditional group that "fully admits the metaphysical dimensions of Hegel's philosophy" (Beiser 2008 3) and "three kinds of nonmetaphysical interpretations" (Beiser 2008 4): Klaus Hartmann's ontologically neutral "category theory", Robert Pippin's reading of Hegel as "essentially in the Kantian tradition" (Beiser 2008 4), and Robert Brandom's idiosyncratic attempt to recruit Hegel for his account of pragmatically mediated social relations. Hartmann's work has found few defenders in recent decades, but Pippin's "Kantian" reading of Hegel has continued to be widely influential. Ironically, Hartmann's original "nonmetaphysical" label has stuck despite this drop off in influence: Hartmann meant by "nonmetaphysical" that his reading of the Logic was "a philosophy devoid of existence claims and innocent of a reductionism opting for certain existences to the detriment of others" (Hartmann 110), but Pippin has never claimed

his reading of the Logic to be devoid of existence claims – and he has recently published a book with the subtitle "Logic as Metaphysics in the *Science of Logic*" (Pippin 2018). Nevertheless, it is now routine to see readings of Hegel grouped roughly as Beiser has; in his article on Hegel for the Stanford Encyclopedia of Philosophy, Paul Redding has a section on "The Post-Kantian (sometimes called the *non-metaphysical*) view of Hegel" in contrast to "The *traditional* metaphysical view of Hegel's philosophy". (Redding 2015)[192]

As should be clear from my discussions of him so far, I read Hegel as very closely engaged with Kant's thought at all times; trying to understand Hegel's view of Kant by focusing on his explicit mentions of him has lead many scholars astray, for Kant's influence on him goes too deep to understand it just by looking for times when Hegel uses the Prussian's name. Often when Hegel mentions Kant by name, it is because he wants to distinguish his own deeply Kantian views from Kant's own, or from those of his contemporaries who claimed to be Kantians; the narcissism of small differences is thus a constant presence in Hegel's texts, and this has prevented the literature from being as useful as it should be to Hegel's readers.

Despite these difficulties, I think the work of scholars such as Robert Pippin, John McDowell, and Terry Pinkard has amply showed the promise of a "Kantian" non-metaphysical

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[192]Redding distinguishes three categories of Hegel-interpretation: "The *traditional* metaphysical view of Hegel's philosophy", "The post-Kantian (sometimes called the *non-metaphysical* view of Hegel" and "The *revised* metaphysical view of Hegel". (Redding 2015) Redding's own sympathies are clearly with this third group, who he describes as charting a *via media* between the first two. This sort of triangulation is always rhetorically tempting; it is the logic of Goldilocks. James Kreines plays the same game, arguing for a "nontraditionalist" metaphysical Hegel (Kreines 2006). But not every virtue is a mean between two vices (see (Hursthouse 1980)), and I align myself simply with the Kantian/nonmetaphysical readers of Hegel. For a curious discussion of how Lenin's reading of Hegel fits into these discussions, see the introduction to (Borchers 2007).

reading of Hegel, in Beiser's terms. The Philosophy of Nature is a topic which has been particularly underdiscussed in this part of the Hegel literature, and it might seem that treating it seriously would refute the whole approach: if anything in Hegel exhibits his pre-critical Neoplatonistic metaphysics, then surely his Philosophy of Nature does. This is Beiser's own view, which he presents as a refutation of any kind of non-metaphysical reading: "Hegel was first and foremost a metaphysician, someone intent on proving the existence of God, someone eager to establish *a priori* the first principles of *Naturphilosophie*." (Beiser 2008 6) I will return to the proving of God's existence in future work;[193] for now it is work enough to examine how a Kantian nonmetaphysical reading is to handle Hegel's supposed "eagerness to establish *a priori* the first principles of *Naturphilosophie*". Among Kantian non-metaphysical readers of Hegel, Terry Pinkard has done the most to explain these parts of Hegel, especially in his recent book Hegel's Naturalism. While there is much of value in Pinkard's work on this topic, I will argue that Pinkard does not fully appreciate what Hegel means by an "Idea", and this prevents him from taking advantage of resources in Hegel which would bolster his approach. As an understandable counter-reaction to Neoplatonistic metaphysical readings of "Ideas"-talk in Hegel, Pinkard attempts to domesticate Ideas by glossing them in terms of the space of reasons and "the basis of intelligibility" (Pinkard 2005 7). Though there is something right in this, it underestimates the extent to which Hegel is rigorous in his use of "Idea" to mean "the unity of concept and objectivity". Paying attention to Hegel's discussion of the Ideas in Science of Logic will allow us to make clear sense of Hegel's talk of "the Idea of Nature", and to see how philosophy is supposed to benefit from a "thoughtful perception" of nature in light of such an

[193]See (Lindquist In Progress).

Idea.

X. Pinkard on Hegel's Philosophy of Nature

The basic orientation taken by Terry Pinkard in Hegel's Naturalism strikes me as correct, though I find his choice of title unfortunate. By the book's title he means that Hegel is committed to a "disenchanted, Aristotelian naturalism" (Pinkard 2013 19) about human beings, which appears to be "naturalistic" mainly in what it rejects: "We are self-conscious, self-interpreting animals, natural creatures whose 'non-naturalness' is not a metaphysical difference (as that, say, between spiritual and physical 'stuff') or the exercise of a special form of causality." (Pinkard 2013 18) Pinkard thus recognizes that the fact that we are (in some way) different from nature, and have to understand ourselves in ways different from anything merely natural, is a part of of Hegel's view; presumably part of his choice of title for his book was the frisson of talking about the "naturalism" of a philosopher so committed to the specialness of ourselves, and the need for something different from the natural sciences to appreciate this point. As Pinkard puts it: "it is when we properly rethink the nature of our own mindful agency, *Geist*, that we come to see nature as the 'other' of *Geist*. In Hegel's more dialectical terms, 'we' as natural creatures make ourselves distinct from nature." (Pinkard 2013 20) The majority of Pinkard's book is dedicated to working out this account of *Geist*; it is only his first chapter that engages in any detail with Hegel's Philosophy of Nature, despite what the book's title may have suggested. Given Pinkard's broader project, this relative neglect of the Philosophy of Nature is entirely intelligible, but unfortunate for two reasons. The first is that Pinkard is too willing to treat the Philosophy of Nature as it has generally been treated, as outdated and dispensable; the second is that paying attention to the way that Hegel thinks of life as "Idea" might have prevented him from being

needlessly sloppy about "Idea"-talk elsewhere in Hegel's system.

Pinkard's high-altitude summary of Hegel's Philosophy of Nature is helpful and reliable; it is only when he turns to criticism that he stumbles. To understand this stumbling, it is helpful to start by looking at how he summarizes the structure of the Philosophy of Nature:

> what Hegel takes from his immensely detailed study of the state of the art of the natural sciences in the early nineteenth century is that there are three different types of explanation for what is really at work (*wirklich*) in the natural world. There are mechanical explanations, which explain the whole in terms of the causal interactions of its parts (each of which is identifiable outside of its position in the whole). [Next there are] chemical explanations to account for how different substances have an affinity or lack of affinity for each other in various combinations (in which the chemical "whole" thus plays an explanatory role different from what it does in mechanical explanations). Finally, there are biological explanations that are teleological in a functionalist sense [i.e., as opposed to attributing external purposes to living beings], where the parts (as organs) cannot be identified as organic functions outside of their place within the organic whole. (Pinkard 2013 20)

Some elucidations of this tripartite scheme are called for, to illuminate Pinkard's summary. In all three sorts of explanations, we have at least two happenings in view, and want to characterize their relationship. The first is what Hegel calls "mechanical" explanations. In these sorts of explanations, the happenings we are concerned with can be picked out independently of each other and independently of their interactions; in treating them as a single thing in need of explanation, our topic is "*something-composite*, it is an aggregate" (EL§195 274). The way the "parts" of this aggregate operate with regard to each other can't be dictated by either of the parts, because the parts are supposed to be independent of each other, and their combining is something external to them. The way in which this combination happens is thus dictated by something

external to both of them: a law. A paradigm of this is Cartesian mechanics, where the way in which bodies interact is supposed to be grasped clearly and distinctly, as are the natures of any two bodies (as different shapes in extension): the relevant law of mechanics, the first body, and the second body are all grasped independently, and it is only by aggregating all three together that we are able to explain what we cared about to begin with, a mechanical interaction. Nothing about either body required that the other body exist or be thought of; nothing about the law required that either body exist to be subject to it; nothing about either body told us what the mechanical law that governed it was. Newton's laws of motion also work like this: I can understand these laws without knowing whether there are any bodies they apply to, and I can be acquainted with bodies they apply to without knowing any of the laws of motion. There is a gap between the general principle (the law) and the individuals (the bodies) in the explanation; understanding one does not require understanding the others.

"Chemical" explanations narrow this gap somewhat. To use an example that fits with the affinity chemistry familiar to Hegel, but which (unlike affinity chemistry) is still known to contemporary readers, consider the neutralization of an acid by a base: vinegar has baking soda poured into it, they react (perhaps inside a paper-mache volcano) and the acidity of the vinegar is removed. Here, the general principle "acids are neutralized by bases" is different from principles like Newton's laws of motion or Descartes's mechanical laws of interaction; to understand what "acids are neutralized by bases" means, I have to know that acids and bases are particular types of substances: this principle lacks the generality claimed by Newton and Descartes, whose laws applied to "bodies" in general. Similarly, if I regard vinegar and baking soda as respectively acidic and alkaline substances, I am picking them out in ways that require that I know that these

are *particular* types of substances, and so know that in picking out an acid (perhaps by taste) I am distinguishing it from another type of substance that exists (a base which is bitter instead of sour). Being able to identify an acid or a base is not independent of identifying other types of bodies, unlike the way Cartesian or Newtonian bodies were supposed to be identified. The particular base and acid identified cannot be identified as acids or bases without knowing that neither is the *only* sort of substance there is, and knowing that these substances interact in ways that depend on what sorts of substance they are. Hegel's general term for this sort of natural science in the Philosophy of Nature is "Physics", and it deals with what Aristotle's physics dealt with: types of substances and the different ways they interact.[194] Unlike in "mechanism", here the individuals interacting cannot be identified in full independence of each other, and the general principle that characterizes their interaction cannot be understood independently of knowing that, e.g., acids and bases are sorts of substances which exist.

In "organic" explanations, we narrow this gap between the general and the individual even further. In explaining that an ocelot has spots so that it can hide in the jungle, the general principle I appeal to (the "genus" that this cat belongs to, the facts about how ocelots live) is something which I cannot understand without knowing that there are individual cats which are in fact ocelots, and I cannot know that it is true without knowing that these individuals live in general and for the most part as this general principle says. If ocelots go extinct, then all such

[194]His term for what *we* call "physics" is "mechanics", even though he mainly has in view theories which embrace "action at a distance", and which are thus *not* mechanical in the sense that historians speak of "the mechanical philosophy" or in the sense in which contemporary biologists may search for "mechanisms" for how particular processes happen, meaning simply causal stories about those processes. As happens unfortunately often in Hegel, his choice of labels has aged poorly.

general principles become false: it will no longer be true that ocelots have spots, live in the jungle, or have spots so that they can hide. Even if similar cats arise in the future, these will not be ocelots; the general principles "go extinct" along with what they explain. This is because the general principles of ocelot-life, everything which goes into what Hegel calls a "genus", depends only on what the ocelots in fact do, the way that they in fact distinguish themselves from their environment in the process of living. The principle that "acids are neutralized by bases" is not like this; if at some point in time all acids were in fact neutralized, and so there were no acids in existence, this principle would remain valid (and would characterize any new acids which came into being) in the same way that it had always been. Similarly, the laws of Cartesian or Newtonian mechanics cannot change due to anything which happens in time; their time-generality is baked into them. But when we are concerned with explaining things in terms proper to organisms, in thinking of beings as internally purposive, the principles we can appeal to must be "historical" in the sense of temporally contingent, because they depend on what actually is done by living beings to get their content. The most general principles in mechanics, such as Descartes's conservation of speed, are supposed to be grasped from the nature of body, or else are (like Newton's universal attractive force) posited in order to enable mathematical constructions of the world (in imitation of a divine geometer); the principles describing different types of "chemical" substances are also time-general, and merely dictate how chemical interactions occur. But the most general principles in the organic sphere are only generalizations over existing types of living being, and so are subject to change. There is no fixed eternal table of what sorts of living beings there are or what they are like, what sorts may arise or how they might act. This is why Hegel speaks of life, but not of merely mechanical or chemical happenings, as

"Idea": the general principles which characterize living individuals arise and pass away with them, they are united with them. On the other hand, as I argued in my second and third chapters, picking out a living individual requires seeing it as manifesting a general way of life that could be shared with other instances of the same kind. Identifying an organic individual or general principle thus requires identifying both organic individuals and general principles; they cannot be grasped independently.

As an aside, it should be noted that Hegel is not opposed to "crosspollination" between the sciences; the later development of a field called "biochemistry" is not a problem for Hegel's distinctions – Hegel himself wrote that "a chemical interpretation of life is not so far-fetched" as it might have seemed to some of his contemporaries (PN §326Z 182). Hegel's claim is not that there will always be precisely one science for each type of explanation we can give of natural phenomena, but that, e.g., any explanation we give in terms of laws will abstract from features of the substances involved, and any explanation of self-organizing phenomena will involve the assimilation of an environment to the self-organizing being.

On my view, all of the above is correct, in addition to being what Hegel thought. Pinkard on the other hand thinks that Hegel's most general ways of carving up nature are outdated, especially by the progress of the biological sciences post-Darwin:

> One of the many places where Hegel's own Naturphilosophie runs into trouble has to do with Hegel's own ideas about how best to comprehend biological explanation. Hegel thinks that the only rational position to take in biology is a form of holism, a rather strong position that seems to violate his own strictures on introducing metaphysical constraints on scientific theory. Relying on his tripartite characterization of explanations in nature (mechanical, chemical, and biological) Hegel concludes that, unlike mechanical wholes,

> organic wholes are simply not analyzable into their parts, and thus that there can be no mechanical or purely chemical explanation of life. (Pinkard 2013 21)

It should be clear from my second chapter that Pinkard moves too quickly here: it is not that organic wholes "are simply not analyzable into their parts", but that the relevant sort of "part", a member, is such that being a member requires being part of a system of members, and this sort of part-whole relationship is not realized by mere aggregates (such as mechanical explanations deal with). The issue is not whether we can identify a system as "living" and then give a "mechanical or purely chemical explanation" of that system; the issue is whether we can give such an explanation without losing sight of what makes that system a *living* one. Even if all events could be given mechanical explanations, this does not mean that mechanical explanations could answer all scientific questions we put to nature; this would follow only if there were laws connecting those mechanical explanations to explanations of other sorts, but such "bridging laws" are a projection of philosophers, not something that actually is found among any laws of mechanics. To be a "holist" about organisms thus does not put "metaphysical constraints on scientific theory", but only delimits what we can and cannot hope for certain theoretical approaches to do for us. Nothing is stopping anyone who wants to treat living systems as lifeless ones; the issue Hegel's Philosophy of Nature raises for this approach is only that this cannot answer many of the questions we have about nature.

Pinkard unfortunately leaves implicit what he means by "holism" in this context. Some light is shed on this by a long footnote where Pinkard connects Hegel's thought to a better-known opponent of "evolution", Georges Cuvier. I will discuss this footnote in detail:

> It was not, of course, Darwin's theory that Hegel opposed. Hegel died in 1831, and Darwin's book appeared in 1859. He opposed the view that there had to be an externally

> teleological explanation of the origin of the species as "completing the series." This was, he thought, empirically vacuous. (Pinkard 2013 27, FN25)

The idea that the origin of species has an *externally* purposive explanation is surprising to see mentioned next to Darwin's name; it is surely one of the better-known claims of The Origin of Species that there is not a particular *telos* at which evolution aims, and that the variety of species we observe is not due to anything like externally-teleological "design". This suggests there may be problems with Pinkard's understanding of the relevant biology (as is unfortunately common among philosophers). His footnote continues:

> His own views were influenced by those advanced by his French contemporary, Georges Cuvier, who argued that each organism is an internally structured whole that exists in such a close harmony with its environment that changing any small part of it would damage its ability to survive in that environment. (ibid.)

This gives Cuvier short shrift: Cuvier was aware of the rejoinder that any contemporary biologist would give to this objection to evolution as an account of the diversity of species: that *very small, gradual* changes to organisms over many generations might lead to massive differences over time without hampering any individual living being's fit with its environment. This objection was in fact put to Cuvier, and was the reason he studied mummified cats brought back from Napoleon's invasion of Egypt: these cats, which were essentially as old as anything historically dated could possibly be, were found to be the same as modern cats. As Cuvier put his reply:

> I know that some naturalists rely a great deal on the thousands of centuries which they add up with the stroke of a pen. But in such matters we can hardly judge what a lengthy time would produce, except by multiplying mentally what a lesser time produces. I have therefore sought to collect the oldest documents on the structures of animals. There are none at all still extant as old or as abundant as those Egypt has provided us. That country offers us, not only the pictures, but the very bodies of the animals embalmed in its

> catacombs.... My knowledgeable colleague, Geoffroy Saint-Hilaire, impressed with the importance of this research, has taken care to collect in the tombs and temples of Higher and Lower Egypt as many animal mummies as he could. He brought back embalmed cats, ibises, birds of prey, dogs, monkeys, crocodiles, and the head of a bull. We certainly do not observe more differences between these creatures and those which we see today than between human mummies and today's human skeletons. We could find differences between the mummies of the ibis and the ibis as naturalists have described it right up to the present time. However, I have resolved all doubts in a report on this bird, a document which is found in a supplement to this discourse, where I have shown that the ibis is now still as it was at the time of the pharaohs. I am very aware that I refer there only to individual specimens two or three thousand years old. But it is always a matter of going back as far one can.
>
> Thus, in the known facts, there is nothing which can in the least support the public opinion that the new genera which I have discovered or established among the fossils, any more than those which other naturalists have established, the *palaeotheriums*, *anoplotheriums*, *megalonyx*, *mastodons*, *pterodactyls*, *ichtyosaurus*, and so on, could have been the ancestors of some animals today, those differentiated from them only by the influence of time or climate. (Cuvier 229)

Cuvier's view of animal forms did not lead him to dismiss the idea of transmutation of species out of hand; he rejected it as speculation that was not supported by the current best evidence. After Lyell's work in geology made a compelling case for the great ancestry of the Earth this evidence changed, and it became clear that the "thousands of centuries" Darwin's theory would end up relying on were founded on more than "the stroke of a pen".

It is worth looking at how Cuvier stated his own views, which Pinkard blames for Hegel's rejection of evolution. Cuvier was the great founder of comparative anatomy; according to Cuvier, the principle which enabled this new science was

> the correlation of forms in organized beings, by means of which each kind of being could be recognized, at a pinch, from any fragment of its parts.
>
> Every organized being forms a whole, a unique and closed system, in which all the parts correspond mutually, and contribute to the same definitive action by a reciprocal reaction. None of its parts can change without the others changing too; and consequently each of them, taken separately, indicates and gives all the others.
>
> Thus, as I have said elsewhere, if the intestines of an animal are organized in such a way as to digest only flesh – and fresh flesh – it is also necessary that the jaws be constructed for devouring prey; the claws, for seizing and tearing it; the teeth, for cutting and dividing its flesh; the entire system of the locomotive organs, for pursuing and catching it; its sense organs, for detecting it from afar; and it is even necessary that nature should have placed in its brain the instinct necessary for knowing how to hide itself and set traps for its victims. Such are the general conditions of the carnivorous regime; every animal adapted for this regime unfailingly combines them, for its species could not have subsisted without them. But within these general conditions there exist particular conditions, relative to the size, species, and habitat of the prey to which the animal is adapted; and each of these particular conditions results in some detailed circumstances in the forms that result from the general conditions. Thus it is not only the class that finds expression in the form of each part, but the order, the genus, and even the species. (Cuvier 217-218)

Cuvier's "principle of the correlation of forms" does indeed express a strong form of holism about the structures of living beings: "None of the parts can change without the others changing too" he says. But read strictly, this is stronger than he in fact argues for, or needs to hold. For example, in illustration Cuvier goes on to say that "For the claws to be able to seize the prey, a certain mobility of the digits will be necessary, and a certain strength in the claws; this will result in specific forms in all the phalanages, and in the necessary distribution of the muscles and tendons." (Cuvier 218) The reality of these constraints can be granted without denying that there

is some play to them; "a certain mobility of the digits will be necessary", namely they need to move quickly enough and grip strongly enough to snatch the prey, but there does not need to be a precise degree of motion the claws are capable of, or a precise speed at which the muscles move them, for this necessity to come to pass. In fact all carnivores have to deal with the pressures of growth, of illness, etc. and so the strength of any individual's claws will vary a bit, even through the entire period in which it can hunt successfully. These sorts of small changes are not what Cuvier was keen to deny; he wanted only to deny that there could be such a beast as one having the teeth of a cow and the bowels of a man, as the minotaur would have to, and to stress how skillfully comparative anatomists could distinguish the superficially similar teeth and bones of different animals. As Darwin was aware, Cuvier's work in comparative anatomy was not inconsistent with evolution, but showed the connections between types of living beings which Darwin's theory would find a novel way to explain. Hegel simply follows Cuvier on these topics; in his Philosophy of Nature we find in his students' notes several pages of Cuvier's writings were simply read to them. I see no reason to not say of Hegel what we should say of Cuvier: he rejected Lamarck's theories, but had no inkling of Darwin's, and his reasons for rejecting what he knew as "evolutionary theory" simply do not apply to what Darwin put forward.

Pinkard is willing to throw out much more of Hegel here than I think is warranted. He writes that

> since evolutionary theory after Darwin has reasonably shown that there are mechanisms at work in the origin of the species (natural selection and sexual selection), it thus seems odd to continue to deny that mechanical explanations can also have a perfectly good place in biological explanations of the world. (Pinkard 2013 22)

Setting aside the adaptationist focus on "natural selection and sexual selection" as the sole

mechanisms of evolutionary change, Pinkard's reasoning here is a *non sequitur*. To say that there are types of explanations that offer themselves when dealing with organic phenomena which are not mechanical ones is not to deny that "mechanical explanations can also have a perfectly good place in biological explanations of the world"; if a biologist wants to study the diving habits of penguins, hydrodynamics will offer her much of interest. But more problematic than this is Pinkard's equivocation on the word "mechanism": to say that natural selection is a mechanism of evolutionary change is not to say that this process is "mechanistic" in Hegel's sense of bringing phenomena under laws. If the sorts of explanations given by contemporary biologists still do not take the form of bringing individuals under covering laws (as they don't), then the core opposition Hegel wanted to stress between the mechanical and the teleological remains intact in current scientific practice.

It seems then that there is nothing in Hegel's views of life and its scientific study that rules out Darwinian evolution. As Pinkard himself notes, there is much in Hegel that is amenable to post-Darwin biology: "Hegel accepted the fact that the earth had a rather violent history of several million years, that there was once a time when there was no life on earth, and that many species of plant and animal life had become extinct" (Pinkard 2013 27). This conjunction of these last two points commits Hegel to the view that new species of plant and animal life can and have arisen and passed away, which is also the only view compatible with his anti-Platonistic view of living kinds as temporally contingent. Darwin offered us a way to understand how this occurs; Hegel has no parallel account to be replaced by Darwin's, but simply leaves this part of his account of nature blank: "In keeping with his own views [about the relationship of philosophy of nature to the empirical sciences], Hegel had no theory of his own about the origin of the

species except for the general idea that the various species had to precipitate out of some kind of 'life process', and he thought that it made more sense to think of each species, more or less, arriving on the scene as fully formed." (Pinkard 2013 37 FN25) This last claim is what we saw in my third chapter, when Hegel refers to each species as arriving on the scene like Athena out of the brow of Zeus; as I argued in that chapter, what Hegel is rejecting is not that species might change or develop over time, but that individuals do not develop in ways peculiar to the type of being they are, but develop by first becoming intermediate forms (so that a prenatal mammal is literally a reptile or a fish, etc.). There is thus nothing in Hegel that commits a partisan of his views to the rejection of Darwinianism; Darwin fills a lacuna in Hegel's picture of nature and requires the jettisoning of nothing of prime importance to it.

Pinkard neglects Hegel's anti-Platonistic account of life forms themselves as temporally contingent, and this leads him to both overestimate the danger Darwin poses to Hegel and to neglect the significance of Hegel's claim that thoughts of living beings involve Ideas. This is related to another problem with Pinkard unfortunately shares with many of Hegel's interpreters: a sloppiness about "Idea"-talk. Here is a passage where Pinkard puts forward Hegel's official statement of what an Idea is and then immediately ignores it:

> In Hegel's technical but nowadays thoroughly unfamiliar vocabulary, such free agency is said to be the "Idea." In its most general form, the "Idea" (in capitals) is the abstract concept taken together with its actualization or, as Hegel puts it, the unity of concept and reality. Although it sounds extremely odd to say that agency is the "Idea" [...] what Hegel wishes to say nonetheless is that, alone among the other objects in the world, agents are self-interpreting. [...] The "Idea" is thus the unconditioned, the absolute, itself, the joint conception of world and agency together that forms the orientation of the rest of an agent's more commonplace beliefs, choices, and plans. (Pinkard 2013 101)

An Idea for Hegel unites concept and object, thought and being, such as Fichte's intellectual intuition of the "I" did, or the God of the ontological argument does. It is misleading to say that in either of these cases we take an "abstract concept together with its actualization"; it is rather the point of Fichte and Anselm that concepts like "I" or "God" are *not* abstract, that I cannot take them *except* with their "actualizations". To think of "a pyramid" and the Great Pyramid at Giza is not to form an Idea, but simply to conjoin two more ordinary representations. But even this sloppy gloss on Hegel's "unity of concept and objectivity" does not justify Pinkard's further gloss on Idea-talk as amounting to saying that "agents alone are self-interpreting". As we have seen, Hegel uses Idea-talk to characterize *all* life, not only our own; the type of historical-rational agency Pinkard cares about is simply too narrow to be what Hegel could mean by calling us "Idea" at all. Pinkard's case is not helped by his further gloss of "Idea" to mean something like "worldview", such that an Idea could be "absolute, unconditioned" in the sense of "forming the orientation for the rest of an agent's more commonplace beliefs, choices, and plans". Even if there is any such sort of general backdrop for an agent that provides a common orientation for more familiar mental attitudes, I see no reason to think of such backdrops as not contingent and malleable like the rest of an agent; calling them "absolute" or "unconditioned" feels like straining to find some use for these Hegelian terms of art. What Hegel actually wants to say in this area is surely what Pinkard quotes him as saying in a footnote: we, as spirit, actualize the *Idea of Freedom*; it is only as free that we possess the sort of agency Pinkard cares about, "self-interpretation", and this Freedom Hegel calls an Idea (not *the* Idea, but one among others). As Pinkard quotes from Hegel's Encyclopedia Philosophy of Spirit §482:

> No Idea is so generally recognized as indeterminate, ambiguous, and open to the greatest

> misunderstandings (and to which it therefore actually is subjected) as the Idea of freedom. There is no other Idea with so little awareness of its meaning in common currency. Since free spirit is actual spirit, we can see how misunderstandings about it are of tremendous importance in practice. When individuals and nations have once got in their heads the abstract concept of freedom existing for itself, there is nothing like it in its uncontrollable strength, just because it is the very essence of spirit, indeed its very actuality. [...] It was through Christianity that this Idea came into the world. According to Christianity, the individual as such has an infinite value as the object and aim of divine love, destined as spirit to live in absolute relationship with God himself and to God's spirit dwelling in him, i.e., man is in himself destined to the highest freedom. (Quoted at Pinkard 2013 83 FN68)

By "freedom" here Hegel means the freedom familiar to the moderns who know that "man is, and ought to be, free": that all bondage is foreign to us and must be overcome, and that this overcoming is just what is involved in our living fully human lives. In calling this freedom "Idea" Hegel means that what this freedom actually is is nothing but what we know it to be, and our knowledge of it is its reality: our freedom is our knowledge that reason is not bound by anything except what it binds itself to, our knowledge that, as John McDowell put it, "we cannot take on trust the deliverances of any received authority. We are entirely on our own." (McDowell 2007 183) This knowledge that we are "under a standing obligation to reflect about the credentials of the putatively rational linkages that govern" our thinking, as McDowell put it in Mind and World (McDowell 1994 12), is our freedom, the freedom that just is our responsibility to live our own lives. Understanding why it is right to call this sort of freedom "Idea" is tied with understanding the radicality of Hegel's understanding of it: our freedom is united with our knowledge of it, and so before we had knowledge of it we actually were not free – and if we lose this knowledge, we will with it actually lose our freedom. A proper appreciation of Hegel's

logical use of "Idea"-talk would have helped Pinkard to make his points, and better attention to the Philosophy of Nature's "Organics" might have lead Pinkard to understand Hegel's "Idea"-talk better.

To argue this, I will close by presenting a high-altitude view of how I take a "thoughtful perception" of nature, in light of what should end up being recognizable as the "Idea of Nature", enables us to better appreciate our own freedom. Pinkard's outline of Philosophy of Nature, which I discussed earlier in this section, can serve as a broad outline of the structure of the book; I will only concern myself with what work this structure is supposed to be doing for us.[195] The final upshot of this account will be that no natural-scientific account of ourselves can do the work of our own self-understanding as freely responsible beings who must live our lives for ourselves. The accounts provided by the natural sciences can thus never threaten to replace this self-understanding or undermine our responsibility to think for ourselves – unless we choose to shirk this responsibility, and then it will still not be a matter for the natural sciences whether to take it up again. This is not because we have some privileged knowledge superior to that achieved by the natural sciences, but because the nature we find in them proves so disappointing: it is unable to free us of the burden of having to be free, but leaves us forced to resolve the ambiguities of the world on our own.[196]

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[195]In this I also have some sympathy with Hartmann's suggestion for how to approach the Philosophy of Nature: "a charitable reading of this part of Hegel's philosophy would surrender detail and retreat to a higher level of abstraction while maintaining the basic program of ordering phenomena in a systematic fashion." (Hartmann 111)

[196]Hegel is hardly alone in the general verdict he reaches about the relation of the natural sciences to our self-understanding. As Davidson observed decades ago, "Quine and Smart, in somewhat different ways, regretfully admit that our present ways of talking make a serious science of behavior impossible. (Wittgenstein and Ryle have said similar things without regret.)"

XI. Thoughtful Perception of Nature as Guided by the Idea of Nature

The first type of explanations Hegel considers in Philosophy of Nature are what Pinkard calls "mechanical explanations, which explain the whole in terms of the causal interactions of its parts (each of which is identifiable outside of its position in the whole)." (Pinkard 2013 20) In these explanations, if we suppose ourselves to be known by means of them, we are left unable to understand why I or you as individuals exist: the individual objects explained mechanically are simply given as posits; nothing about the general form of lawlikeness, nor the particular form these laws take in mechanics (such as Newton's law of gravitation or Kepler's laws of planetary orbits) tell us why there are individuals falling under these laws, nor do these individuals account for the existence of the other individuals that they interact with. On the other hand, nothing about the lawlike mechanical behavior of these individuals can be understood from the individuals themselves: laws are essentially heteronomous, forcing individuals to behave according to an alien will (literally in the case of Newton's laws, which articulate the principles by which the Divine Geometer measures out his construction of the cosmos).

But we are thinking beings in nature, and know our existence and knowledge are owed to our own free thinking: in knowing I exist as a theoretical and practical agent I do not posit myself arbitrarily, but know that my individual existence in the particular way I exist is a manifestation of the Idea of the Good, is thinking making itself actual by making things as they should be. The general way in which I regard myself as thinking, after the end of the Logic, thus means I cannot recognize myself in a nature understood mechanically: merely posited objects governed by laws as by an alien will cannot be all that can be understood in nature, if I am to find myself present in

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(Davidson 1984 188)

the world.

The second type of explanations Pinkard mentions are "chemical explanations to account for how different substances have an affinity or lack of affinity for each other in various combinations (in which the chemical "whole" thus plays an explanatory role different from what it does in mechanical explanations)." (Pinkard 2013 20) To continue with the example I used earlier, in the neutralization of an acid by a base the vinegar and the baking soda already have particular characters to them: given that we have a token acid and a token base, we already can understand something of how they should interact, without the need for an alien law to decide the case. This is because the general sort of interaction being explained in this way is already particularized in a way that Newtonian laws abstract from: we are dealing with how a this-such and a that-such interact, but the this- and the that- are already understood only by their interrelatedness. We cannot grasp an acid as an acid or a base as a base without being able to make the acidic/alkaline distinction, and so if the one type of individual is understood to exist then the existence of the other type is rendered unmysterious, no longer a bare posit like the independently existing individuals with which any mechanical individual is decreed to interact. Given that what is poured into a container of vinegar is alkaline, we can understand why what happens next should follow. But this whole complex of how acids and bases interact so as to leave a neutral product is simply grasped as a way that these sorts of things happen: we do not understand why *this* general way of things obtains, and not some other – why the objects of nature include acids and bases at all. We cannot understand this as how things *ought* to be; in explaining happening chemically we describe them faithfully, but do not show them to be *good*, and so we cannot understand ourselves merely chemically.

The third and final type of explanations Pinkard mentions are "biological explanations that are teleological in a functionalist sense, where the parts (as organs) cannot be identified as organic functions outside of their place within the organic whole." (Pinkard 2013 20) In these explanations of living beings in terms articulable as the Idea of Life, the individual living beings are grasped as being the particular living beings they are because of the general ways in which they live, and the general ways in which they live are understood as having the specific features they do because of the activities of these individuals through time. General and individual moments of plant or animal life reciprocally determine each other, as discussed at length in chapter three. Here we can genuinely explain individual activities in nature by reference to a normative standard internal to them: the seal must eat fish so that it may stay fat and survive the cold, lest it freeze to death. This normative standard is not a heteronomous impingement on the seal, but is what the seal must achieve to be the seal it is; it is also not inexplicable that nature contains this general way of being a seal, for the seals themselves have made it so (and before they did so, "seal" was not a possible way living beings could be). So in nature understood in vital terms, as articulable through the Idea of Life, we have come close to being able to recognize ourselves in nature.

But even here, nature proves unable to satisfy us. That seals have made their way in the world is not sheer contingency, but is explained by the activities of the seals; that "seal" is a general way in which nature appears in individual objects is also explained by the activities of the seals in time. But it is contingent on time that there are seals now, and did not used to be; the normative standard which is internal to sealdom came to be in time and at some sad future time will pass away. But in thinking we know ourselves to be bound by no standards but those we

judge to be worth holding to; the fixed series of contingent generalities that the history of living generations brings forward are still too heteronomous to be how we thinkers can come to grips with ourselves. The seal can simply do what seals do, and in this it does no wrong; but we must never be so dogmatic as to let a single way of doing things dominate our behavior, for any rigid adherence to a fixed form of life always threatens injustice and unreason.

By showing these different ways of thinking about objects in general ways to all be different approaches to explaining happenings in nature, we come to recognize that the natural sciences disclose a nature which is open to a plurality of strategies for explanations of its unfolding. It is also made manifest to thinking that none of these explanations is simply given to us by nature; in all of them thinking is at work in what was originally supposed to be simply other-than-thought. Even in what is simply foreign to it, thought recognizes its own activity; as William James put it, "The trail of the human serpent is thus over everything." (James 37)

But coming to recognize nature as amenable to the advances of thought is not the only result of the survey of the natural sciences undertaken in Philosophy of Nature. One who thinks through this material also comes to realize that our self-knowledge of thinking as partially realizing the Ideas of the True and the Good has not found itself attested to in nature: in knowing myself as a theoretical and practical agent, I grasp myself in general ways which I come to recognize as different from any of the general ways in which objects are grasped in the natural sciences. As Pinkard rightly said, "it is when we properly rethink the nature of our own mindful agency, *Geist*, that we come to see nature as the 'other' of *Geist*."(Pinkard 2013 20). In knowing that I bring things and thoughts into accord I do not regard myself as a subject of mechanical law or chemical interaction or species-typical behavior, but as free to determine myself according to

nothing but thinking's own standards. The end of the survey of nature in Philosophy of Nature is thus the realization that nature is *not* the only object of our theoretical and practical knowledge, though the determination of nature we began with was just this: what our theoretical and practical knowledge had to come to grips with.[197] Our efforts to come to grips with nature bring with them the realization that, unlike nature, we are free; in coming to grips with nature we bring forward novelties and new creations that nature did not provide for us. Our knowledge of what is "out there" is not limited to a reality which is "just there anyway" independently of us, but includes nature's making itself into something free: spirit as a historical product arises by thought leaving the natural realm in which it found it could not settle and making a home for itself through a history of freedom. These new creations of our own thoughtful effort are objects for our theoretical and practical knowledge to grapple with, but of a different order than anything merely natural: they are not merely ordered by generalities, but order themselves through them. Nature, in contrast to what we bring forth from ourselves, stands unveiled as what has not yet been ordered by thought acting through itself, and what is too weak to so order itself. This is in fact the "Idea of Nature" which unites the phenomena of Philosophy of Nature: they are just what we cannot recognize ourselves as, what we cannot find thought ordering itself in, but can only use to

[197]As Aristotle says, "nature is only one particular genus of being" (Metaphysics Gamma 3, 1005a33). Irad Kimhi's rejection of "logical naturalism" in Thinking and Being tends towards a similar conclusion as Hegel on this topic, though reached in a very different way: "Nature *is* a whole, Aristotle says – but a *limited* one, since 'there is someone still further above the student of nature': the philosopher." (Kimhi 27) These quotes from Metaphysics Gamma 3 show the awkwardness in Pinkard's positioning Hegel as a "naturalist" of an "Aristotelian" sort: Kimhi seems to me to have a firmer grasp of the terrain. Aristotle's rejection of some of the Platonic spookiness that would later attract many religious thinkers to Neoplatonism does not mean Aristotle was a forerunner of Dennett and Quine; Aristotle's rejection of the Ionians and Atomists was far more important for his thinking than his rejection of "Plato's heaven".

develop ourselves out of and through. The "Idea of Nature" is the unfolding of the thought and intuition of what is "out there", foreign to thinking. The triad of mechanical, chemical, and biological explanations which form the moments of this Idea show themselves to be the ways in which thought can come to grips with something that it can know without knowing itself as just what it knows. The Philosophy of Spirit will then work out the forms in which thought comes to grips with something which it can know as just itself. To think of something as "natural" is to think of it as an object of knowledge that is lacking the freedom of thought; to think of something as free is to think of it as improving on mere nature through knowledge.

We know coming out of the Logic that nature is both intelligible and foreign to thought; the first attempts to think through what "foreign to thought" means leads to grasping nature as a plurality, then to this plurality as united by laws, then to forms of unity which admit of greater intelligibility than laws, ultimately the forms of unity which characterize life-forms, the Idea of life. Here is the upshot of looking at Goethe and moving beyond Kant: we can get nature as a whole into view, and recognize the plurality of ways in which nature becomes known to us, by viewing natural inquiry as pluralistic in both its methods and subject-matters. If we can only know nature as dead matter moved by law-abiding forces, then the problem of nature is insoluble (as Kant affirms); to know it as more than this is already to make progress towards solving the riddle of nature, of finding how we can handle its Janus-faces.

Most readings of Hegel's Philosophy of Nature have read it alongside Schelling; I, following Förster, have instead emphasized the value of reading Hegel alongside Goethe – especially drawing on Kant's notion of an "intuitive understanding", which Goethe had earlier picked up on. In Chapter 4, I distinguished three ways in which a desire to become "a neutral,

seemingly godlike being [who] must seek out and examine what is, not what pleases" (GSS 11) can manifest in inquiry. Goethe's essay on *Experiment as Mediator between Subject and Object* is structured by his efforts to come to grips with this desire, which he worries must be respected if nature is to be done justice.

The first way in which this desire to become neutral and divine manifests itself is as a worry that my inquiry might be merely *my* inquiry, and that the results I am producing might not hold good for others: this is a normal and healthy worry about the replicability of one's findings, and I do not think Goethe and Hegel differ significantly in how much they value the reproducibility of experiments. For both of them, an experiment that cannot "be reproduced at any time given the requisite preparations, apparatus, and skill" (GSS 13) is unable to do the work that an experiment needs to do in the ongoing social activities of a science. If nature is just what thought has to labor to come to grips with, an experiment that produces its results for only *one* inquirer might as well not exist at all: the labors of thought in all of the rest of society are not helped by such an idiosyncratic product, and the individual who takes themself to be so blessed as to be able to produce the desired result can never get the affirmation through recognition that would assure them that they have in fact shown something true about nature. For Hegel no less than for Goethe, if I am to inquire into nature then it must be accidental that *I* am inquiring, and the findings of my inquiry must be capable of being shared with all fellow laborers.

The second way in which the desire to become neutral and divine manifests itself in inquiry is in the worry that one might cling to a pet theory, mistaking one's predilection for its truth for an assurance of it – confusing one's frail human finding with a divine revelation. Goethe and Hegel are sadly quite close on this point, too, for their awareness of this danger is ironic:

both of them accuse Newton of falling prey to it, and of Goethe's rival Theory of Colors as being free from it, while Goethe's color-theory has many idiosyncratic problems.

But the third way in which the desire to become neutral and divine manifests itself in inquiry brings out a deep difference between Goethe and Hegel: Goethe worries that in our piecemeal inquiries, we only uncover bits and pieces of nature, and that a radically different type of inquiry is needed to grasp nature as a whole. Förster followed Goethe in this worry, and advocated a Goethean "methodology of the intuitive understanding" as the needed corrective. As I put it in Chapter 4, there is a desire to get out of his own skin at work in Goethe's essay, a drive to escape the fact that in natural inquiry we connect experiences in ways that satisfy us, and not in ways that are independent of what satisfies us. Goethe wants to find the ways in which nature "really is" connected, and not the ways in which we happen to connect it – and so any way we happen to connect it will be unsatisfying to him, just because *we* have done it. Goethe, and Förster following him, failed to provide us with a way to come to grips with this desire.[198] They held that the only way to deal with the desire to view nature from a godlike perspective is by finding a new sort of inquiry that can provide us with such a viewpoint.[199] Hegel, on my

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[198]See Chapter 4, sections VI-VIII.

[199]Though I think this sort of inquiry fails in its stated task, there is an elective affinity between Hegel's method in the Philosophy of Nature and Goethe's way in his *Experiment* essay: for both of them, a proper grasp of the whole can be had only after surveying all of the relevant parts (or at least representative samplings of them). Förster connects this with Fichte's notion of a "pragmatic history of the human mind" (see (Förster 2012 198-204), but Goethe's essay is an independent source for Hegel to see the value of this sort of approach – and Hegel would have learned the same lesson from his collaborations with the carefully-organized garden and botanical institute that Goethe founded with the botanist Batsch. The "Historical Excursus" at (Förster 2012 287-291) tells this part of the story, which culminates in Hegel trying to get a lectureship in botany.

understanding of him, provides us with a better option: tools for coming to grips with the fact that there can be no such viewpoint, even for God. The "impotence of nature"[200] prevents there from being any such "whole" of nature to know in such a special way; there simply is no ideal end to inquiry that we might be supposed to measure our present state of inquiry up against. Appreciating the fact that nature as such cannot satisfy our deepest needs for self-knowledge provides us with a novel way to appreciate that the desire to become "a neutral, seemingly godlike being" is for inquiry *only* a desire, and that knowledge of nature is not denied to us until we can satisfy such an impossible desire. Nature as such cannot satisfy us, and the wish to have it do so is for inquiry only a temptation: it distracts from the real labor of constructing theories which articulate what is in whatever ways best serve the needs of practicing scientists.

The dissatisfaction felt when we look to the natural sciences to solve the riddle of nature is not a sign that the natural sciences have failed us, or that nature poses us a riddle too hard to solve (which difficulty we might find sublime satisfaction in gawking at, reveling in our weakness); it is "the unhappy self-consciousness" trying to find itself outside of itself. "Thoughtful perception" of nature in light of the Idea of nature reveals to us that nature is itself unsatisfying: spirit's satisfaction comes in its freedom from nature, and its knowledge of nature as impotent against it. The Philosophy of Nature provides us with reason to reject Sellars's *scientia mensura* doctrine: when it comes to what is and why things happen, the natural sciences cannot be the sole arbiter, for their intelligibility depends on a sort of intelligibility which does not belong to any of the natural sciences. McDowell in Mind and World argued that philosophy must reject the picture of nature as a "realm of law", making room for a picture of "nature as

[200]See Chapter 3, section V.

second nature, too". Hegel demands we see that not only is nature "second nature, too" but that spirit is "the truth of nature", is where the intelligibility that we seek in the natural sciences finds realization. Nature is "the Idea in the form of otherness" because nature is supposed to be intelligible, to be just what is known and acted on by thought, but full intelligibility, full knowability and full opportunity for action, comes only from spirit itself, never from outside of it: Absolute Spirit is the truth of the Absolute Idea, and nature is what spirit leaves behind as merely the beginning-point of its historical developments.

For Hegel, there is nothing outside of nature; spirit is nature conceived in another way. But there is on the other hand nothing outside of spirit: even the apparently spiritless mass of nature is the world that is thought of in "world history", the last form of "Objective Spirit" in the Philosophy of Spirit. Mountains, seas, earthquakes, and even celestial phenomena (think of omens such as eclipses and comets) are all within the fold of world history; world history does not concern itself merely with the men Alexander, Caesar, and Jesus but also with their Ὠκεανός, their Rubicon, their Golgotha. There is nothing outside of the history of the world, as there is nothing outside of nature – even the limiting case of what is "prehistoric" or "historically irrelevant" is conceived of in terms of world history, and so there is nothing in nature which does not admit of redescription in terms of history – just as nothing in history is incapable of being redescribed as "merely" natural.[201] The attempt to make sense of ourselves, which for Hegel finds

[201]"No man is a hero to his valet", as the saying goes; Hegel correctly notes (PWH 87-88) that this is not because no man is a hero, but because "the valet is a valet" – a man's valet is not in a position to judge of the man's heroism, but must attend to him simply as someone whose pants need ironing and whose bedpan needs emptying, etc. Similarly, nothing is historically important to nature, or to one who views nature as merely natural: this does not show that nothing is historically important, but only that grasping historical importance requires doing something other than thinking naturalistically. Clarifying what this different sort of approach

a paradigm in our creation of historical accounts that tell us how we arrived at where we are, is not independent of the attempt to make sense of "the natural world", of the creation of apparently "spiritless" accounts of a world to which we seem to be alien. Both of these spring from the "wonder" which Aristotle claimed to be the origin of all of the sciences; both of them are ways we have established for reconciling ourselves to the world in which we find ourselves, for making peace with the riddle of nature. The natural sciences with their systems of laws, accounts of particular substances, and species of living beings begin from this wonder at the world, but (in Hegel's view) cannot do justice to it; it is only in the final historical forms of art, of religion, and of philosophy that Hegel thinks the wonder from which all science begins comes to a resolution with itself. These historical forms of "Absolute Spirit" – aesthetic absorption, religious consciousness, and philosophical thinking – freely unite us with the world in a way that the systems of the natural sciences, and the practical dispositions that go along with thinking of the world as mere subject of law or assortment of substances or garden of living creatures, do not.

The practice of science itself, the attempt to make sense of nature and ourselves, leads us to realize that all our accounts of nature are revisable and partial – and this realization that any account we give is subject to revision as we see fit is a glimmering of our self-recognition as spirit, as the being which exists only as its own product, as its own task of self-interpretation. Making sense of ourselves as subject to laws, or as substances with particular natures, or as living beings of a given kind, are ways of falling away from this self-knowledge into a kind of "bad faith". Both inauthenticity (in Heidegger's sense) and romantic irony treat a human way of

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requires, and why he thinks any approach which does not view the world in terms of the self-development of freedom is inadequate to the task, is the main topic of the Introduction to Hegel's "Lectures on World History".

life as something merely animal – something simply present in nature as a given, independent of their responsibility. The inauthentic "One" who simply "does what one does" goes along with this animal life, treating it as independent of him in the way that a living being's genus is; the ironist distances himself from it, treating it as "what one does" without willingly cooperating with it, but also without accepting any responsibility for it. The ironist treats life as an object of reflection; the inauthentic live unreflectively; to be authentic is to live reflectively without distancing yourself from life as an object independent of you. [202]

The freedom with which the natural sciences develop themselves is not presented back to them in the accounts they give of nature; it is only in the historical forms of art, religion, and philosophy that spirit can confront itself face to face. In a Hegelian modification of Aristotle, we might say that all our science begins in wonder *at our own freedom*. We can only make sense of ourselves by also making sense of our world, and so the task of making sense of our world can't be separated off from the difficult historical work of making ourselves into the free beings we know we are and ought to be – and this excludes the hope that we might be able to replace our knowledge of this freedom with any kind of final construction of ourselves, any fixed orbit that we might peacably revolve in throughout eternity. No knowledge of our world can remove Adam's burden to make his living through labor, though all knowledge may profitably contribute to this task.

The misguided search for absolute certainty in natural science is to blame for Kant's and

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[202]That it is unclear how to do this, how to "live reflectively" without treating life "as an object of reflection" – that this distinction is itself not as clear as we might like – goes along with the ambiguities that attend trying to live authentically, and the difficulty of it even for those most committed to such an ideal.

Schelling's confused emphasis on mathematization in science; they wanted certainty without the difficulties of hermeneutics and history. They sought certainty in nature through the mathematical construction of it, but, knowing the foolhardiness of this (thanks to Hegel's criticism of mathematical formalism and reliance on laws in his Philosophy of Nature) we can recognize the plurality of approaches to nature in the different natural sciences. This allows for a better appreciation of what is really at work in nature and its revelation in the natural sciences, but also teaches us that the kind of certainty we really wanted all along cannot be found there, and must be achieved through our own efforts: we cannot put our full & final confidence in anything inhuman, but must remain faithful to the freedom of thought.[203]

[203]Kant was thus on the right track when in the first Critique he "found it necessary to deny *knowledge*, in order to make room for *faith*. (*Glaube*)" (Bxxx). Kant erred in (like Luther) conflating faithfulness (German *Treue*) with the holding of an opinion when trying to think the Pauline notion of Πὶστις; Hegel sees Luther and Kant as alike in one-sidedly opposing religious "faith" to knowledge in this way. What is properly denied in order to enable faithfulness is not knowledge as such, but the imperial desire for a "godlike" knowledge outside of any human standpoint; recognition that this desire is foolhardy enables a practical fidelity to our already divine reason.

APPENDIX I: Indefensible Divisions in the Philosophy of Nature

Though there is much in Hegel's thinking about nature that I want to defend, there are some significant aspects of his thought in these areas that I think are indefensible. By this I do not mean the merely outdated aspects, such as his ignorance of Darwin or Einstein, but features of his thought which I think were problematic to begin with and have only gotten worse with age. In this appendix I take up two of these features, which have gone largely unremarked by Hegel's critical readers: the division between the second and third books of the Philosophy of Nature, and the plant/animal dichotomy that Hegel uses to structure the two main sections of the "Organics".

A surprising fact about Hegel's text is that Hegel only rarely uses the language of "Ideas" in the details of the Philosophy of Nature. He mentions the "Idea of nature" repeatedly in the introductory sections of the work, but otherwise rarely uses the word "Idea" when speaking in his own voice[204] before the third section of the work, the "Organics". And even in the "Organics", "Idea"-talk is rarely present in the first section on geology (titled "The Terrestrial Organism"). It is only once Hegel turns to discuss plants and animals that he regularly uses the language of "Ideas"; in these sections the term is fairly common.

To deal with one exception to these general claims: Hegel does use the language of "Ideas" at the end of the "Physics", mentioning "the Idea of the chemical process" (PN§329Z, II:189) and articulating a whole series of connected phenomena which transition into one

[204]There are a few exceptions, such as an obscure claim that "Gravitation is the true and determinate Concept of material corporeality **realized as the Idea**", which was added to the discussion of "Absolute Mechanics" in 1827 (PN §269 I:260); I don't know how to make sense of this addition, and have seen no discussion of it. Most other uses of it are clearly the ordinary German word "*Idee*" being used in turns of phrase; these are clearly not relevant to my discussion, and so I pass them by.

another, which system also includes within itself as moments the various classical elements Hegel has discussed earlier in the volume. But if this is an Idea in the proper sense, it can only be on the model of Goethe's original idea of color – the one which Lichtenstein's queries about colored shadows had dashed to the ground.[205] Hegel's "Idea of the chemical process" merely arranges empirical phenomena in such a way that they can be seen transforming one into the other; he is not entitled to any claim to have in this way exhausted all possible chemical phenomena (and he did not even account for all then known, as Petry documents in his notes on the "Physics", where Hegel's errors can be found regularly noted and traced to their origins in the contemporary literature). I think it is better to read this language of an "Idea of the chemical process" as loose talk, to be understood in context as Hegel bridging the discussion of "the chemical process" (as the final section of the "Physics") to the opening of the "Organics" (where Ideas proper are in view, on my account). As with all philosophers, Hegel can be found speaking loosely at times; for example, he must be speaking loosely when he claims that the chemical process both is and is not life[206] (and I think a careful reading shows the disidentication to be the view he really endorses).

That the mere systematic organization of a holistic series of empirical phenomena does not, by Hegel's standards, amount to the articulation of an Idea can be seen by the fact that Hegel

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[205]See Chapter 4, sections VI-VIII, for this episode, as discussed by Förster.

[206]"In general, the chemical process is in fact *life*" (PN§335, II:219); "Life is implicitly present within the chemical process, but the inner necessity there is not yet an existent unity." (PN§335Z, II:220); "If the products of the chemical process spontaneously renewed their activity, they would be life" (PN§335Z, II:219) – note the contrary to fact counterfactual in this last claim: "***Wenn** die Produkte des chemischen Prozesses selbst wieder die Tätigkeit anfingen, **so wären** sie das Leben*." (Emphases added.)

never refers to the solar system as an Idea, though he clearly views his division of stellar bodies into suns (which only rotate), comets and moons (which orbit but do not rotate), and planets (which both orbit and rotate) as both exhaustive and as assigning to each body a distinct place in a holistic system of some sort.[207] Hegel's thinking about nature is throughout "organic" in the sense of being holistic – Hegel never loses sight of the fact that any region of nature being discussed is just one region among others, and that he needs to make sense of it as such. But such a general holism, which lends itself to systematic presentations that we might call "organic", in the sense of hanging together nicely so that each part of the final presentation seems to be crucial to the whole picture, does not bring with it the special sort of cognition which Hegel thinks is crucial to grasping living beings in nature. In the Appendix to the Transcendental Dialectic (A642/B670-A668/B696) Kant is happy to admit that we are bound to think of nature in systematic ways (even as designed by a wise architect), but without conceding that this shows anything about how nature in fact is; Hegel's emphasis on knowledge via Ideas by means of intuitive intellection goes past Kant in securing for us knowledge of how nature in fact is, but it does not do this by securing one particular systematic articulation as nature's uniquely privileged one.[208] To claim that all our knowledge of nature is an articulation of the Idea of nature is not to claim that thinking by means of this Idea brings with it any one particular way of articulating things: it is rather a way of bringing out what it is that we are doing in our various piecemeal and

[207]Such a top-down thinking via system is I think the only way to explain Hegel's rejection of axial rotation on the part of moons, which is an otherwise unmotivated error.

[208]See Chapter 3, sections V and VI for more on this topic.

revisable articulations of natural phenomena.[209] Stressing that all of these efforts are developments of the Idea of nature, as opposed to merely conceptual creations which may or may not correspond to experiences given from outside of the conceptual realm, is just to say that these efforts have their empirical content internally and not by an external admixture.[210] They are all efforts to come to grips with what thought is about which is not spirit, which is not a thinking that recognizes itself as its own thinking of itself – this is just what it is to think nature, and these efforts (however inadequate they may be in this or that particular respect) cannot fail to be a thinking of nature, lest they fail to be a thinking at all.

Hegel's ambiguity about the transition between "The Chemical Process" and "Life" also shows itself in the way the "Organics" itself is organized. The main headings into which Hegel's "Organics" is divided are unfortunate; despite discussing geology under the heading "The Terrestrial Organism", Hegel is clear that the Earth is not literally a living being any more than

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[209]On this point I disagree with the more realist view of "natural kinds" that Förster adheres to in the "Epilogue" to The Twenty-Five Years of Philosophy.

[210]Here, again, I view what can seem to be rather extreme and peculiar Hegelian metaphysics as merely one more way of bringing out what is involved in rejecting what Davidson called "the dualism of conceptual scheme and empirical content" – which rejection Rorty identifies with Pragmatism, in his sense (cf. his "Pragmatism, Davidson, and Truth" in (Rorty 1990)). In this context I am reminded also of Wittgenstein's remark that "The solution of philosophical problems can be compared with a gift in a fairy tale: in the magic castle it appears enchanted and if you look at it outside in daylight it is nothing but an ordinary bit of iron (or something of the sort) (Wittgenstein 11e). As McDowell said in an interview, when asked about how to think of Hegel if not as a wild-eyed speculative metaphysican: "I take this impression that Hegel was constructing a system as rather being his peculiar method of therapy." (*Ich würde den Anschein, dass Hegel ein System konstruiert, dagegen gerne als seine sonderbare Methode der Therapie verstehen*.) (McDowell 2000 29)

the other planets are.[211] Geological transformations involve a sort of holism for Hegel, which partly motivates his placement of his discussion of geology, but a similar sort of holism is at work in his discussion of meteorology, which Hegel placed early in the second section of the Philosophy of Nature under the heading "The process of the elements" (§286-8, II:42-53).[212] So mere holism of an "organic" sort is insufficient to motivate Hegel placing his discussion of geology in the "Organics" section rather than in the "Physics"; there appears to be a bit of a kludge in this portion of Hegel's system. There is a tolerable transition from Hegel's discussion of "The chemical process" (PN§326-36, II:178-222) as a whole to the discussion of the Earth as the particular place where this totality of chemical processes is found, and a similarly tolerable transition from the discussion of interlocking chemical reactions to the closed circuit of organic functions, but Hegel seems to me to have cheated a bit in using both of these transitions to guide his move to his next topic. If he had proceeded to discuss geology as a final topic in "Physics",

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[211]The first sentence of this section immediately states that "The primary organism [i.e., the Earth]... is not a living existence." (PN§338, III:15); a few pages later he reiterates that "the Earth itself is not a living subject" (PN§339Z, III:17)

[212]Hegel's theory of the elements is really a theory about moments of the meteorological process: for Hegel water and fire and air are not *primarily* "things" at all, unlike modern chemical elements, but are names for aspects of the process by which the earth's climate and subterranean events unfold. It is unfortunate that Hegel did not notice that his account of "elements" was not obviously inconsistent with that then developing in Daltonian chemistry; they simply were not using the word "element" in the way Hegel was, and so Hegel did not need to dismiss, e.g., the elemental nature of hydrogen in the way he did. As Petry puts it, "Hegel shows here that he was aware of the need for a new system of chemical classification. It is curious that he should not have given more consideration to Dalton's *atomic theory*" (PN II:407); Hegel's well-grounded distaste for metaphysical atomism likely kept him from giving Dalton's empirical corpuscularian theory deeper consideration. Hegel was aware that there was a difference between the way he used the word "element" and the way others did, but he simply complained about this dogmatically: "In recent times, chemical simplicity has been arbitrarily accepted as the definition of an element" (PN§281R, II:33) – as though Hegel's own use of the word "element" was free of all arbitrariness.

this would be in keeping with the first transition; if he had proceeded to discuss organisms as the next topic, this would be in keeping with the second transition. But as it is, the treatment of geology (which goes into some detail, Hegel being an old rock hound) is awkwardly handled as "Organic" in some nebulous sense while delaying the introduction of the first genuine organisms in the Philosophy of Nature: plants.

The *Ur*-division between plants and animals causes further problems for the coherence of Hegel's presentation, though it carries an Aristotelian pedigree and was in keeping with the practice of Hegel's contemporaries. The vegetable/animal dichotomy has more recently fallen out of prominence in biology; we are now well aware that most living beings are single-celled, and we reserve the labels "plant" and "animal" for multicellular creatures.[213] But a deeper problem than merely being out of date arises for Hegel from his attempt to ground the plant/animal dualism in nature itself: it leads him to claim that, though plants (unlike planets) are genuinely alive, his account of what it is to be alive only applies to them in an attenuated way. So while we need to distinguish the members of a plant holistically, with reference to their differentiated functions within the whole life-cycle of the plant, Hegel claims that these members are really only imperfectly differentiated ("In their existence, the parts are intrinsically the same" as he puts it (PN§345Z, II:59)). Part of this is an misunderstanding of Goethe's notion that "all is leaf" (which I discussed in Chapter 4); more prominently, Hegel seems to have been misled by the extreme plasticity of plant members into thinking that this showed a difference in kind between these and "real" members, which are found only in animals. The phenomenon of grafting

[213] As Trevor Levere notes (Levere 120, FN57), Hegel was already trending in the wrong way in his own day, as mycology was already making clear that if fungi are "vegetative" they are radically unlike ordinary plants – and we nowadays do not consider them plants at all.

especially seems to show that, despite being functionally dependent on one another, the members of a plant are also interchangeable with one another; a cutting which is grafted onto another plant or replanted in fresh soil may have stems change into roots, for example.

But Hegel moves too quickly in drawing sharp distinctions between plants and animals on these points; the plasticity of plant organs is not different in kind from the plasticity of animal organs, but in degree: some animal organs, such as the liver, can take up various functions if other organs, such as the spleen, are absent. The dramatic phenomenon of grafting is not different in kind from the parasitism found in animals, or from the comingling of animals found in conjoined twins. Making sense of plants as "all leaf" in fact requires seeing the differentiation of the archetypal "leaf" in its determinate, functional, forms in various plants, and is not in tension with this functionalism; the particularization of members required by the Idea of life is thus found in plants as well as in animals. The functional differentiation of these "leaves" varies with the plant's environment, just as with the animal case; the types of plants also vary with the environmental and functional variances among plants, just as with animals. Animals are not the "truth of plants" except in showing to us more readily what is at work more slowly and plastically in plants.

A similar sloppiness with regard to empirical details (again with an Aristotelian pedigree) has Hegel playing down the extent to which plants assimilate their environments to themselves. As Hegel presents it, the way a plant assimilates water is roughly pneumatic: like a bit of plumbing, it simply forces water upwards and around through its xylem.[214] As I once heard a

[214]Though most of Hegel's discussion of sap is overly pneumatic, he does note that "Capillary tubes, and the law of capillary action, are irrelevant to the explanation of plants; when the plant is thirsty, it wants water, and so absorbs it." (PN§346aZ, III:77) As Hegel's discussion

botanist complain, Aristotle did the same thing, making it sound as though only animals genuinely consumed and transformed elements of their environment while plants simply filtered nutrients out of them. Ironically, Kant is better than Hegel on this score; his example of the growth of an oak tree[215] nicely shows that the way that plants convert mere water and light into plant-stuff perfectly instantiates what Hegel called the "assimilation-process".[216]

That Hegel's systematic presentation of natural-scientific topics contains these "transition problems" (as Pippin called them in his well-known essay in The Cambridge Companion to Hegel (Pippin 1993)) does not show that the project of his Philosophy of Nature was fatally flawed, in my view. But such problems as these do show that the errors in this work are not solely the result of Hegel's being antiquated (and so ignorant of scientific developments since the 1830s). Hegel's systematic ambitions were incredibly ambitious, and I think it is important for those who admire even the most notorious parts of his system to admit that Hegel, like all revolutionary thinkers, sometimes stumbled in the execution of his projects.

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of this topic is heavily indebted to the authors from whom he is quoting, it is perhaps unfair to blame him for not being better than his time on this score.

[215]Discussed in chapter 2.

[216]It is tempting to suppose that Hegel, like many naive observers of nature, mistook the relatively slow motions of plants for immobility, as Aristotle seemingly did with his claim that only animals, and not plants, are able to move themselves in accordance with "sensation" (αἴσθησις). As an aside, Aristotle's "sensation" should not be confused with modern puzzlings over whether plants can be said to "be conscious" or "feel pain"; in Aristotle it is clear that the root meaning of "sensation" is just the capacity to move oneself towards what is beneficial or away from what is harmful, with the various sense-modalities as merely ways in which this capacity is actualized, and so his fundamental plant/animal distinction cannot rest on "whether there is anything it is like to be a rhododendron" or not.

APPENDIX II. Hegel and Evolution

Before closing, I must address what may seem to be an elephant in the room for any discussion of a historical philosopher of biology: Hegel and evolution. On the account I have defended on Hegel's behalf, species are temporally contingent and subject to change.[217] It is thus an obvious lacuna in my account if I say nothing about how Hegel's view relates to post-Darwinian views of evolution. My reading of Hegel is committed to the contingency of what species there are, and to a rejection of Creationism about species (since what types of living beings there are must depend on the activities of living beings themselves, and not on merely external purposiveness), and so some sort of transmutation of species must be involved in nature, as I read Hegel. My reading of the genus-process in particular allows for a gradual transmutation of species across generations because of the indeterminacy of species. The "impotence of nature" that I discussed in Chapter 3, sections V and VI leads to the failure of transitivity of the claim "Parent and child are of the same species" – though in each case we can find some way of conceiving of parent and child as sharing a common form of life, the sorts of forms of life we can grasp each generation of "a" species as living under will shift so that (eventually) descendant and

[217]Positioning my view in the broader literature on "species"-talk in biology is outside the scope of this dissertation. I will note that I am unhappy with the prevailing view that "species are individuals" because I regard it as an oversimplification. Grouping members of a species together either as mere members of a common class or as merely related to one another as parts of a trans-historical individual does not capture the sort of generality that species-talk traffics in, on my view. Species-membership needs to bring with it general ways of living which are common to the members of the species, and this means that species-membership cannot *just* be a matter of falling under the extension of a class; it needs to also involve being subject to a set of norms which contain *de re* references to the class of beings subject to them. Species on my view have a collective and not merely a distributive unity, in Kant's sense (A582/B610): Members of a species are not pre-existing items which ca be grouped together to form a set (which can then be called "the species"), but are the individuals they are because they fall under a common form of description ("the Fs") which articulates their way of life ("Fs θ").

ancestor might differ quite strikingly from each other. In this way the ways of life living beings craft for themselves through their vital activities can be general enough to be shared between any given living being and its parents, but without this showing that transmutation is ruled out by the general thought that "Parents and children share their kind in common, and so kinds are constant across generations".[218]

It may seem clearly anachronistic to read Hegel as allowing that the species in nature vary; this is certainly a theme that became prominent after Darwin,[219] but Hegel is harshly critical of his contemporaries (such as Lamarck and Erasmus Darwin) who are now often seen as Darwin's forerunners – and Hegel thinks very highly of Cuvier, who is now notorious for rejecting the transmutation of species. So it may seem that, as Pinkard claimed, Darwinianism must have obsoleted Hegelian views in biology.

But Hegel criticized his contemporaries on their particular proposals, not on the very idea of transmutation of species. It is thus worth looking at one reason Hegel was hostile to what then went under the name of "evolution", as in Lamarck and Erasmus Darwin: his association of it

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[218]As a comparison, consider J.L. Austin's argument against "looks" as items in our ontology (Austin 1964): it can seem natural that if two colored patches look the same to us, there is some one thing (a "look") that they have in common. But if we imagine a sequence of blue colored patches shading very gradually from a dark navy to a light periwinkle, we could construct a sequence such that any two adjacent patches look the same, but the extreme ends do not – and so there cannot be a "look" that any two adjacent patches share, for then the end patches would have to share it as well. And so indistinguishability of two figures in some respect does not, in general, entail identity of some item that accounts for this indistinguishable feature in each figure.

[219]Trevor Pearce has a very interesting article (Pearce 2012) which traces out some of the early connections that Hegel's readers drew between Hegel and Darwin, including the pragmatists Mead and Dewey in America and Samuel Alexander and the Haldane family in Brittain. See (Rorty 2003) for an interesting discussion of the different ways Royce and Dewey made use of Hegel in this period.

with merely *quantitative* changes, rather than qualitative ones, in the history of species-forms.

Throughout the Philosophy of Nature, Hegel is scornful of talk of life "emerging" gradually from non-life, or of one species "emerging" from another by continuous change. Hegel is willing to entertain the possibility that "the Earth was once devoid of living being, and limited to the chemical process etc.", and says of this scenario that "even *if*" this were true at one point in the past, "as soon as the flash of living being strikes into matter, a determinate and complete formation is present, and emerges fully armed, like Minerva from the brow of Zeus.... Such an individual certainly evolves in various ways, but although it is not yet complete at birth, it is already the real possibility of everything it will become." (PN§339Z, PNIII22-23) The first living being, which emerges in a flash in Hegel's story, is already internally structured in functional ways. It is already able to maintain itself against its environment, and to "evolve" and "complete" itself in many ways, because it "emerges fully armed, like Minerva": it comes into being as something that maintains itself against an other, its environment. By the use of metaphorical weaponry, it has certain ways in which it continues to keep itself alive, though its environment may present it with threats.

This Minerva that emerges from non-living chemical processes is something novel in nature, which we can grasp in ways that we could not grasp the non-living chemical processes: we now have a being that distinguishes itself from what is other than it, and maintains itself by making this other into a mere means; through such assimilation the living being makes what is foreign to it into a tool for its own functioning. Because of this discontinuity in the way living beings are understood and the way non-living beings are understood, Hegel thought any attempt to understand a *gradual* emergence of life from non-life as basically confused. When life

emerges in nature, for the understanding there is a "leap".

Hegel also took "evolutionist" thinking, as he knew it in his contemporaries, to involve thinking that change of species was *merely continuous*, with species morphing into each other without *discrete* demarcations between various species – mere quantitative variance, progressing from "less evolved" to "more evolved". But this is simply not how evolution is understood, post-Darwin: Darwin gave us ways to understand the origin of the varieties of species we encounter in nature, where discrete differences between varieties of life-forms are at least as striking as continuities, and no good sense can be given to claims such as "Man is more evolved than the turnip". What Hegel rejected, the attempt to understand all living beings as having a single continuous form of life that develops progressively, was not what Darwin affirmed.

Hegel defends no positive account of how the variety of species arise in nature; his criticism of his contemporaries on this topic is entirely negative. He did not have a story to tell about how species arose that was compatible with what he thought was definitive of life; he says that the Biblical book of Genesis has as good a story as he knows of: "The account of the creation given in Genesis is still the best, in so far as it says quite simply that the plants, the animals, and man were brought forth on separate days." (PN§339Z, III:22-23) This comment cannot be taken entirely seriously; as he often does, Hegel is here exhibiting his deadpan wit.[220] If Hegel really believed that animals came into being after plants did (on a separate "day"), this would come up in the "Organics": but there we find nothing of the sort.

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[220]It is I think often unappreciated how funny Hegel can be. As with many philosophers, Hegel clearly had fun writing his texts, but the texts produced don't make clear where the reader is supposed to laugh along with him. This is especially bad with a thinker as difficult as Hegel, for few things can be as confusing as an uncomprehended joke.

Further, Hegel is committed to the contingency of what species there are in nature, and to this changing over time; these are features the Genesis story does not provide for. Any such change that was the result of a divine Craftsman (like in Plato's Timaeus) would bring into being a kind of artifact, which owed its form to the will of its maker. Nothing internally purposive can be accounted for in this way. Hegel's enthusiasm for God-talk does not show that the Philosophy of Nature is guided by a theistic metaphysics, and so "non-metaphysical" readers of Hegel need not shy away from it on this score: the sort of God-talk Hegel endorses is idle for the natural sciences, and does no significant work in the Philosophy of Nature. Hegel's ironic reference to Genesis 1 is not a sign that Hegel is a Creationist, but is a slight against the state of the sciences at his time: they had not produced a better framework than the unsatisfactory one that had been available for millennia.

Hegel's rejection of "quantitative" evolution, theories of evolution which essentially hinge on something like a "drive towards increasing complexity", can be seen as resting on them not really being explanatory in any but a superficial way – we want theories which account for the qualitative differences we actually find between living species, not just some way to describe a similarity that we can trace through different species across time. To speak of all species of living beings, in their great variety of different sorts of complexities, as being the result of a "drive" towards complexity is merely to put a fig-leaf over our ignorance of what may have caused the varieties we encounter in nature. Darwin's theory is not like this picture; Darwinian "evolution" names a family of model-types whose concrete developments all essentially involve qualitative features of empirical living beings. There is no *a priori* way to develop what "should" evolve in the future in a Darwinian framework; this is the sense in which Darwinian evolution

can be said to be "progressive without an endpoint". But without it being determinable in advance where "further evolutionary progress" should lead, no sense can be given to the notion that evolution is a merely quantitative development from "less evolved" to "more evolved" creatures along some determinate axis (such as "increasing complexity"). Contrast this picture with the types of evolutionary accounts Hegel has in mind, which want to trace a continuous line through all living beings (generally with humanity as the conclusive endpoint of development) and it is clear that Hegel's discussion of "evolutionary theories" don't have anything like Darwin in view. This is unsurprising, as it would be anachronistic in the extreme to read pre-Darwinian thinkers as aware of a Darwinian paradigm, but Hegel's explicit discussions of "evolution" have misled many of his readers to thinking in a lazily anachronistic fashion.[221]

When, in the introduction to the Philosophy of Nature, Hegel introduces the notion that "Nature is to be regarded as a *system of stages*" he immediately clarifies that

> This not to be regarded as a natural engendering of one out of the other however, but as an engendering within the inner Idea which constitutes the ground of nature. Metamorphosis accrues only to the Concept as such, for development is nothing but the alteration of the same. In nature the Concept is however partly a mere inner principle, and partly an existence which is simply a living individuality; existent metamorphosis is therefore limited solely to this individuality.(PN§249 I:212)

In this passage, Hegel clearly wants to rule out an absurd misreading of the Philosophy of Nature

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[221]Eroll Harris has some interesting and relevant remarks in his essay "How Final is Hegel's Rejection of Evolution?" (Harris 1998) though Harris seems to me to overreach in claiming that Hegel "had some premonition of the very recent Gaia Hypothesis advocated by James Lovelock" (Harris 201). Not only does Harris seem to me to overread some of Hegel's organismic metaphors (for instance taking almost literally Hegel's talk of springs as "the lungs and secretory glands by which the Earth transpires" and volcanoes as "its liver, in that they represent the spontaneous generation of heat within it" (PN§341Z, III:36)) but he seems unreasonably confident that hitching Hegel's philosophy of nature to Lovelock is the best way to defend Hegel going forward.

according to which each "stage" develops temporally out of the prior one – as if space gave birth to time which gave birth to matter, or sound first produced heat. The "system of stages" presented in the Philosophy of Nature is supposed to be a time-neutral survey of the forms in which nature produces herself, so that all "development" which nature undergoes is "the alteration of the same" – merely one or another change of a sort dealt with in the work.[222] But because "Nature never draws precise boundaries"(PN§346aZ, III:81) this system leaves space open in nature for "existent metamorphosis", or alterations in the small of what the Philosophy of Nature handles in the large.

As Hegel explicitly discusses living nature in terms of "metamorphosis" (PN§345Z, III:54), a natural mistake to make in approaching his view of evolution is as thinking that some features of the living world are contingent, but its large-scale features are fixed; for example, it may be contingent (as Houlgate notes) "that there are... over sixty species of parrot" (Houlgate 2006 118), but necessary that there are (among all the living animals) birds and fish and mammals and amphibians.[223] This reading awkwardly seems to line Hegel up with some proponents of Intelligent Design Creationism, who sometimes affirm what they call "microevolution" and only reject "macroevolution".[224]

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[222]"The formations of nature are determinate and bounded, and it is as such that they enter into existence." (PN§339Z III:22)

[223]As Hegel's taxonomy of living animals lays them out; see Chapter 3, section VI for details on Hegel's taxonomy.

[224]The most explicit example of this reading I have found is in a commentary on Derrida's "Voice and Phenomenon", where Vernon Cisney writes that "Hegel's philosophy of nature, though dialectical and progressive, was decidedly anti-evolutionary. While he allowed for a temporal progression of life on Earth, and even variations within the specific 'Concept' instantiated in different animals within the same genus (what intelligent design apologists call

But I think Hegel's genuine view is more interesting than this misreading makes it out to be. As Pinkard notes, Hegel is strongly influenced by Cuvier.[225] One aspect of this is Hegel's agreement with Cuvier that species have become extinct in the history of the world;[226] what species exist at a given time is contingent on historical events. There can thus be no production through mere thought of a "chain of being" which would link and account for all types of living beings; the types of living beings there happen to be depends on environmental, historical, contingencies which are external to the mere thought of living being as such, and this foils any attempt to articulate existing kinds of living things in the static, atemporal terms of a "chain of being". As Hegel puts it:

> If one is prepared to grant that the works of man are sometimes defective, it must follow that those of nature are more frequently so, for nature is the Idea in the mode of externality. In man, the basis of these defects lies in his whims, his caprice and his negligence.... In nature, it is the external conditions which stunt the forms of living being;

'microevolution', for instance, that spiders *evolve* into different species, while nevertheless remaining spiders, etc.), his thought forbade the development of more complex forms from out of simpler forms" (Cisney 17). Harris endorses a similar view (but with more fondness for Hegel) when he writes that "Hegel was more sympathetic to the idea of metamorphosis as it had been expounded by Goethe.... he admits the process of development takes place in time, but he denies that this occurs with the genus, because the Concept posits all its internal differentiations qualitatively and coordinately" (Harris 196).

[225]See above, section X.

[226]"It is immediately apparent from the constitution of the Earth, that it has a *history* (*ein **Geschichte***), and that its condition is a result of successive changes. It bears the marks of a series of prodigious revolutions, which belong to a remote past, and which probably also have a cosmic connection, for the position of the Earth with regard to the angle which its axis makes with its orbit could have *changed*. The surface of the Earth bears evidence of its having supported a vegetation and an animal world which are now extinct (a) at great depth, (b) in immense stratifications, and (c) in regions where these species of animals and plants do not thrive." (PN §339Z III:18)

> however, these conditions produce these effects because life is indeterminate (*unbestimmt*), and also because it is from these externalities that it derives its particular determinations. The forms of nature cannot be brought into an absolute system therefore, and it is because of this that the animal species are exposed to contingency. (PN§370Z III:180-1)

How new species arise is, for both Hegel and Cuvier, explicitly not susceptible of "evolutionary" explanation; Hegel says a new kind of living thing "arises fully formed, like Minerva out of the forehead of Zeus", and Cuvier invokes what came to be called "the principle of the correlation of parts" to deny the existence of transitional forms between species (they both take themselves to be disagreeing with Lamarck on this topic).

But looking at each of them in a narrower context, it is not clear how deeply Hegel and Cuvier agree with one another on this issue: Cuvier is specifically denying that ancient forms of elephants (mammoths and mastodons) might be an ancestor of current elephants because of this impossibility of transitional forms linking them;[227] Hegel on the other hand is committed (on my reading) to changes in environment and habits of life leading to alterations in species (as what a living being's genus is depends on the activities of its conspecifics, and these are temporally contingent). But from a post-Darwin standpoint, it is clear that this difference from Cuvier is a significant one: if small changes in life-forms are allowed over time without this leading to life-forms which are unable to actually preserve themselves as life-forms (*contra* Cuvier), then there is nothing in principle preventing Hegel from affirming that, over a long enough period of

[227]This was in part because Cuvier did not see any evidence for the large spans of time evolutionists posited for their processes to unfold; he famously mocks "the thousands of centuries they pile up with the stroke of a pen." (Cuvier 228) Of course the state of the evidence changed radically after Charles Lyell's work, but the three volumes of his Principles of Geology were being published when Hegel died in 1831.

time, an ancestral life-form could develop in radically different descendant life-forms. Hegel's Cuvierism, as I have interpreted it, has already been weakened enough to be compatible with the transmutation of species.

There is an alternative to my reading of Hegel on species-change that would place him even closer to Cuvier than I do, but while also allowing that the anti-Darwinian reading has something right: Hegel might have thought that the varieties of species that exist came into being only with Earth-upending catastrophes of the sort Cuvier believed in, and then remained fixed until the next catastrophe. I do not see how this view is materially an improvement on the more common types of Creationism, however: if an existing group of living beings that is suited to a world pre-catastrophe is at some moment replaced by a new group of the same sort that is suited to a world post-catastrophe this seems to me to be miraculous – unless living beings as such are able to adapt themselves to changes in nature, and so might gradually change as their environments and conspecifics do. And while Cuvier was studiously silent about where new kinds of living beings came from after a catastrophe (such that his work was taken up by Anglican apologists upon its being translated into English), leaving open whether or not these were divinely created, Hegel explicitly rejects any notion of creation as something that might happen at one time rather than another: "The creation is eternal however; it has not only taken place once, but is eternally producing itself, for the infinite creative activity of the Idea is its perenniating activity." (PN§339Z III:18) So if Hegel is read as agreeing with Cuvier that living species remain fixed between cataclysms, when they change suddenly, this view is even more problematic for Hegel to hold than it is for Cuvier.

As a further objection, this Cuvieran-catastrophist reading of Hegel ignores the fact that

Hegel largely ignores the catastrophism/uniformitarianism debate; his discussion of geology treats the older debate between "volcanists" and "neptunists" as though this were still the framework of debate in the 1820s and 30s (for which Trevor Levere criticized him: "Hegel, although aware of contemporary debate [between uniformitarianism versus catastrophism], was indifferent to it" (Levere 106); "The evidence for upheaval seemed to fascinate Hegel, at least in its detail, but the upheavals in themselves were ultimately of little importance to him" (Levere 112)). If Hegel believed that the "changes in the external life of nature" to which "the genera themselves [are] completely subservient" (PN§370Z, III:179) were limited to catastrophes, he never says so, and the history of such catastrophes is of no significance in his discussions of plant or animal kinds.[228]

Hegel clearly rejects "creationism" of a neoplatonic sort (which he calls "onesided and superficial" (PN§249Z, III:214))[229], where kinds of living beings pre-exist in a divine mind. On the reading I gave in Chapter 3, a particular form of living being only exists as a form of a kind of living being because of the activities of living beings which bear that life-form; *Gattungen* are historical individuals (though at the logical level, as Ideas, they are "concrete universals" and so

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[228]My thanks to Anton Kabeshkin for raising this alternative "Catastrophist" reading, in conversation.

[229]It is noteworthy that, despite the clear connection of emanationism with late classical Greek neoplatonism, Hegel says "The course of emanation is peculiar to the oriental world" (PN§249Z, III:213). This is made more comprehensible if we look at how Hegel organized his lectures on the history of philosophy: under the general heading of "Neoplatonic Philosophy" Hegel includes the following as "The Philosophers" under discussion: Philo of Alexandria, "The Cabalists", "The Gnostics", and "The Alexandrian school" (where Ammonius Saccas, Plotinus, and Proclus are singled out for extended treatment). Neoplatonism was thus for Hegel associated with Egypt and Judaism, and so with "the oriental world" more than with what he regards as centrally Greek thought. (See the table of contents at (LHP1825 ix) for this organization.)

not *merely* individual). The empirical behavior of living beings thus determines (and is reciprocally determined by) the kinds of living beings there are, historically, in time. If a demiurge had in mind various forms of life before deciding that "the Earth should bring forth living creatures", and then the Earth brought forth from herself living beings, the representations in the divine mind would not be Ideas of living beings – they would be mere concepts of the understanding, for the representations would not determine that the Earth in fact brought forth living creatures of this or that sort (without the additional *Fiat* of the divine will), and what the Earth in fact brought forth would not determine what representations pre-existed in the divine mind. Hegel's life-forms, on the other hand, as logical Ideas, do not have this kind of external, contingent relation between thought and being: the individual living beings act in ways which are intelligible as the actions of a living being only with their life-form in view, and their life-form gets its determinacy from the concrete actions of the individuals which bear it. So there is no room in Hegel for any kind of "intelligent design" or "creationism" with regard to species; they must arise as historical contingencies to be Ideas at all.

Bibliography

Anscombe, G.E.M. Intention. Harvard University Press: 2000.

"Modern Moral Philosophy". Philosophy 33 (124): 1-19 (1958)

"On Promising and Its Justice, and Whether It Needs be Respected In Foro Interno". Critica 3 (7/8): 61-83 (1969)

Aquinas, Thomas. Summa Contra Gentiles. Tr. V.J. Bourke. 1955. Retrieved from https://dhspriory.org/thomas/ContraGentiles.htm

Summa Theologiae. Tr. Fathers of the English Dominican Province. 1920. Retrieved from http://www.newadvent.org/summa/1050.htm#article4

Arber, Agnes. Arber A. Herbals, Their Origin and Evolution: A Chapter in the History of Botany 1470-1670. Cambridge University Press: 1932

The Interpretation of the Flower: A Study of Some Aspects of Morphological Thought. Biological Reviews 12(2): 157-184 (1937)

Aristotle. Generation of Animals. Tr. A. Platt in The Complete Works of Aristotle Volume 1. Princeton: 1984.

Metaphysics. Tr. B. Jowett in The Complete Works of Aristotle Volume 2. Princeton: 1991.

Poetics. Tr. B. Jowett in The Complete Works of Aristotle Volume 2. Princeton University Press: 1991.

Politics. Tr. B. Jowett in The Complete Works of Aristotle Volume 2.

Austin, John L. Sense and Sensabilia. Oxford University Press: 1964.

Beatty, John H. "The Evolutionary Contingency Thesis" in E. Sober (ed.) Conceptual Issues in

Evolutionary Biology. Bradford: 2006.

Beiser, Frederick. "Kant and *Naturphilosophie*" in M. Friedman & A.Nordmann (eds.) The Kantian Legacy in Nineteenth-Century Science. 2006.

"Introduction: The Puzzling Hegel Renaissance" in The Cambridge Companion to Hegel and Nineteenth Century Philosophy, ed. F. Beiser. Cambridge University Press: 2008.

Bochemuhl, Jochen. "Transformations in the Foliage Leaves of the Higher Plants" in D. Seamon and A. Zajonc (eds.) Goethe's Way of Science: A Phenomenology of Nature. State University of New York Press: 1998.

Borchers, Scott. Hegel's *Science of Logic* and Global Climate Change. The Edwin Mellen Press: 2007.

Bortoft, Henri. The Wholeness of Nature. Floris Books: 1996.

Brady, Ronald. "Form and Cause in Goethe's Morphology" in F.R. Amrine, F.J. Zucker, and H. Wheeler (eds.) Goethe and the Sciences: A Reappraisal. Spring: 1987.

"The Idea in Nature: Rereading Goethe's Organics" in D. Seamon and A. Zajonc (eds.) Goethe's Way of Science: A Phenomenology of Nature. State University of New York Press: 1998.

Bridges, Jason. "Davidson's Transcendental Externalism". Philosophy and Phenomenological Research 73 (2): 290-315 (2006)

Brown, John. The Elements of Medicine of John Brown, M.D., Translated from the Latin, with Comments and Illustrations, By The Author, A New Edition, Revised And Corrected, With A Biographical Preface by Thomas Beddoes, M.D. Trans. T. Beddoes. Oracle Press:

1803.

Bruno, Anthony. “The Appearance and Disappearance of Intellectual Intuition in Schelling’s Philosophy.” Analecta Hermeneutica 5:1-14 (2013)

Buchdahl, Gerd. “Hegel’s Philosophy of Nature (review)”. British Journal for the Philosophy of Science 23 (3): 257-266 (1972)

Buck-Morss, Susan. Hegel, Haiti, and Universal History. Pitt Illuminations: 2009.

Burbidge Hegel’s Systematic Contingency. Palgrace Macmillan: 2007.

The Logic of Hegel’s Logic: An Introduction. Atlantic Highlands: 1981.

Carlson, David Gray. A Commentary on Hegel’s Logic. Palgrave Macmillan: 2007.

Cartwright, Nancy. The Dappled World: A Study of the Boundaries of Science. Cambridge University Press: 1999.

Cassirer, Ernst. Rouseau-Kant-Goethe. Harper Torchbooks: 1963.

Christensen, Dan Ch. Hans Christian Oersted: Reading Nature’s Mind. Oxford University Press, 2013.

Cisney, Vernon. Derrida’s Voice and Phenomenon. Edinburg University Press: 2014.

Conant, James. “The Search for Logically Alien Thought”. Philosophical Topics 20 (1):115-180 (1992)

Cuvier, Georges. Georges Cuvier, Fossil Bones, and Geological Catastrophes: New Translations and Interpretations of the Primary Texts Tr. M.J.S Rudwick. University of Chicago Press: 1998.

Dahlstrom, Daniel. “Hegel’s Appropriation of Kant’s Account of Teleology in Nature” in Houlgate (ed.) Hegel and the Philosophy of Nature. State University of New York Press,

1998.

Davidson, Donald. “On the Very Idea of a Conceptual Scheme” in Essays on Truth and Interpretation. Oxford University Press: 1984.

“Knowing One’s Own Mind” in Subjective, Intersubjective, Objective. Oxford University Press: 1987.

DeVries, William. “The Dialectic of Teleology”. Philosophical Topics 19(2): 51-70 (1991)

Dewey, John. “The Reflex Arc Concept in Psychology.” 1896. Retrieved from https://brocku.ca/MeadProject/Dewey/Dewey_1896.html

Duck, Michael. “The Bezold–Brücke phenomenon and Goethe’s rejection of Newton’s *Opticks*”. American Journal of Physics 55: 793-796 (1987)

Englert, Alexander T. “Life, Logic, and the Pursuit of Purity”. Hegel-Studien 50:63-95 (2017)

Engels, Friedrich. Schelling and Revelation. 1842. Retrieved from https://www.marxists.org/archive/marx/works/1841/anti-schelling/index.htm

Eyde, Richard H. “The Foliar Theory of the Flower: Goethe’s Metamorphosis survived the Darwinian revolution partly because of the metaphysics of two twentieth-century botanists and partly because the origin of flowering plants is unknown”. American Scientist 63 (4): 430-437 (1975)

Fichte The System of Ethics. Cambridge University Press: 2005.

Findlay, John. “The Hegelian Treatment of Biology and Life” in R.S. Cohen and M.W. Wartofsky (eds.) Hegel and the Sciences. D. Reidel: 1984.

Finkelstein, David. “Holism and Animal Minds” in A. Crary (ed.) Wittgenstein and the Moral Life: Essays in Honor of Cora Diamond. Bradford Books: 2007.

Fisher, Naomi. *Kant, Schelling, and a New Philosophy of Nature*. Unpublished dissertation. 2015.

Foot, Phillipa. Natural Goodness. Clarendon Press: 2003a.

"Philippa Foot (interview)". May/June 2003b. Retrieved from https://philosophynow.org/issues/41/Philippa_Foot

Ford. Anton. "Action and Generality" in A. Ford, J. Hornsby, and F. Stoutland (eds.) Essays on Anscombe's *Intention*. Harvard University Press: 2011.

Förster, Eckart. "Goethe und der Idee einer Naturphilosophie" in J. Maatsch (ed.) Morphologie und Moderne. De Gruyter: 2014.

The Twenty-Five Years of Philosophy. Trans. B. Bowman. Cambridge: Harvard University Press, 2012.

Fox Keller, Evelyn. Reflections on Gender and Science. Yale University Press: 1996.

Franks, Paul. All or Nothing. Harvard University Press, 2005.

Frege, Gottlob. The Foundations of Arithmetic. Tr. J.L. Austin. Northwestern University Press: 1980.

Friedman, Michael. Kant and the Exact Sciences. Harvard University Press: 1992

"Kant – *Naturphilosophie* – Magnetism" in M. Friedman and A.Nordmann (eds.) The Kantian Legacy in Nineteenth-Century Science. MIT Press: 2006.

Gardner, Jostein. Sophie's World. Tr. Paulette Moller. Farrar, Straus, and Giroux: 1994.

Garrett, Don. "Teleology in Spinoza and Early Modern Rationalism" in Gennaro (ed.)New Essays on the Rationalists. Oxford University Press, 1999.

Gifford & Foster, Morphology and Evolution of Vascular Plants, 3rd. Edition. W.H. Freeman:

1988.

Ginsborg, Hannah. The Normativity of Nature. Oxford University Press: 2015.

"Two Forms of Mechanical Inexplicability in Kant and Aristotle". Journal of the History of Philosophy 42 (1): 33-65 (2004)

Goethe, Johann Wolfgang von. Scientific Studies. Ed. and Tr. D. Miller. Suhrkamp: 1988. (Cited as "GSS".)

Italian Journeys. Tr. By R.H. Heitner. Suhrkamp: 1989.

Italienische Reise. 1816. Retrieved from http://gutenberg.spiegel.de/buch/italienische-reise-3682/37 (Cited as "GIR")

Gould & Lewontin "The Spandrels of San Marco and the Panglossian Paradigm." Proceedings of the Royal Society of London. Series B, Biological Sciences 205(1161):581-598 (1979)

Grant, Ian Hamilton. Philosophies of Nature After Schelling. Continuum: 2006.

Guicciardini, Niccolò. Isaac Newton on Mathematical Certainty and Method. MIT Press: 2011.

Guyer, Paul. "Thought and being: Hegel's critique of Kant's theoretical philosophy" in Beiser (ed.) The Cambridge Companion to Hegel. Cambridge University Press: 1993.

Haag, Johannes. "Faculties in Kant and German Idealism" in D. Perler (ed.) The Faculties: A History. Oxford University Press: 2015.

Hanh, Songsuk Susan. Contradiction in Motion: Hegel's Organic Concept of Life and Value. Cornell University Press: 2007.

Harris, Eroll E. "How Final is Hegel's Rejection of Evolution?" in Houlgate (ed.) Hegel and the Philosophy of Nature. State University of New York Press, 1998.

Hartmann, Klaus. "Hegel: A Non-Metaphysical View" in MacIntyre (ed.) Hegel: A Collection of Critical Essays. University of Notre Dame Press: 1977.

Hegel, G.W.F. Faith and Knowledge. Tr. W. Cerf and H.S. Harris. State University of New York Press, 1977. (Cited as "GuW".)

Hegel's Philosophy of Mind. Tr. A.V. Miller. Oxford University Press: 1971. (Cited as "PS" with § number and pagination.)

Hegel's Science of Logic. Tr. A.V. Miller. Humanity Books, 1969. (Cited as "WdL".)

Lectures on Aesthetics. Tr. T.M. Knox. Clarendon Press: 1975. (Cited as "Aesthetics".)

Lectures on Logic. Tr. and interpreted by Clark Butler. Indiana University Press: 2008.

Lectures on the History of Philosophy 1825-6, Volume II: Greek Philosophy. Tr. and Ed. by R.B. Brown. Oxford University Press: 2006. (Cited as "LHP1825".)

Lectures on the History of Philosophy, volume III. Tr. E. Haldane and F.H. Simson. Kegan Paul: 1896. (Cited as "LHP".)

Lectures on the Philosophy of World History. Tr. H.B. Nisbett. Cambridge University Press: 1981. (Cited as "PWH".)

Philosophy of Nature. Tr. M.J. Petry. Routledge, 1970. Three volumes. (Cited as "PN" with § number and volume number/pagination)

The Berlin Phenomenology tr. Michael Petry. D. Reidel: 1971. (cited as "BP")

The Difference Between Fichte's and Schelling's System of Philosophy tr. H.S. Harris and W.Cerf. State University of New York Press: 1977. (cited as "*Differenzschrift*")

The Encyclopedia Logic. Tr. T.F. Geraets, W.A. Suchting, and H.S. Harris. Hackett

Publishing Company, 1991.(Cited as “EL” with § number and pagination.)

The Phenomenology of Spirit. Tr. A.V. Miller. Oxford University Press: 1977. (Cited as “PhG”, with § numbers to Miller’s paragraph numbering and pagination)

Vorlesungen der Geschichte der Philosophie III second edition. Duncker und Humbolt: 1844. (cited as “VGP)

Herder God: Some Conversations. Tr. F.H. Burkhardt. Bobbs-Merill: 1940.

Hintikka, Jaako. “Kantian Intuitions”. Inquiry 15: 341-355 (1972)

Holbo, John. “ Between Infinite Judgment and Infinite Jest - or - the Howl of ‘da Noive of!’ takes wing at dusk.” June 2006. Retrieved from http://www.thevalve.org/go/valve/article/between_infinite_judgment_and_infinite_jest_or_the_howl_of_da_noive_of_take/

Houlgate, Stephen. An Introduction to Hegel: Freedom, Truth, and History Wiley-Blackwell: 2005.

The Opening of Hegel’s *Logic*: From Being to Infinity. Purdue University Press: 2006.

Hursthouse, Rosalind. “A False Doctrine of the Mean”. Proceedings of the Aristotelian Society 81: 57-72 (1980)

James, William. Pragmatism and The Meaning of Truth. Harvard University Press: 1975.

Kabeshkin, Anton. “Schelling on Understanding Organisms”. British Journal for the History of Philosophy 25 (6): 1180-1201 (2017)

Kant, Immanuel. Critique of Pure Reason. Trans. P. Guyer and A.W. Wood. Cambridge University Press: 1998. (Cited according to A/B pagination.)

Critique of the Power of Judgement. Tr. P. Guyer and E. Matthews. Cambridge

University Press, 2000. (Cited as "KdU" with AK pagination added.)

Practical Philosophy. Tr. M.J. Gregor. Cambridge University Press: 1996. (Cited as "PP" with AK pagination added.)

Theoretical Philosophy after 1781 Tr. M. Friedman. Cambridge University Press: 2002. (Cited as "MFNS" with AK pagination added.)

Kern, Andrea. Sources of Knowledge. Tr. D. Smyth. Harvard University Press, 2017.

Kierkegaard, Soren. Writings XXV: Letters and Documents. Princeton University Press: 2009.

Kimhi, Irad. Thinking and Being. Harvard University Press: 2017.

Kreines, James. "Hegel's Metaphysics: Changing the Debate". Philosophy Compass 1 (5): 466-480 (2006)

"The Logic of Life" in Beiser (ed.) The Cambridge Companion to Hegel and Nineteenth Century Philosophy. Cambridge University Press: 2008.

Reason in the World: Hegel's Metaphysics and its Philosophical Appeal. Oxford University Press: 2015.

Kuhn, Dorothea. "Goethe's Relationship to the Theories of Development of His Time". Journal of Social and Biological Structures 7: 307-315 (1984)

Levere, Trevor. Hegel and the Earth Sciences in Hegels Philosophie der Natur: Beziehungen zwischer empirical und spekulativer Naturerkenntnis. Ernst Klett Verlag: 1986.

Lindquist, Daniel. "Christianity and the Terror: Or, More Zizek-Bashing" 2007. Retrieved from http://sohdan.blogspot.com/2007/10/christianity-and-terror-or-more-zizek.html

"On the Very Idea of a Non-Metaphysical Reading of Hegel on the Ontological Argument." In progress.

Lloyd, Elisabeth. "Adaptationism and the Logic of Research Questions: How to Think Clearly About Evolutionary Causes". Biological Theory 10 (4): 343-362 (2015)

The Structure and Confirmation of Evolutionary Theory. Princeton University Press: 1994.

Lloyd, Elisabeth and Schweizer, Vanessa. "Objectivity and a Comparison of Methodological Scenario Approaches for Climate Change Research". Synthese 191 (10): 2049-2088 (2013)

Longino, Helen. Science as Social Knowledge. Princeton University Press: 1990.

Longuenesse, Beatrice. "Point of View of Man or Knowledge of God: Kant and Hegel on Concept, Judgement, and Reason" in S. Sedgwick (ed.) The Reception of Kant's Critical Philosophy. Cambridge University Press: 2000.

Mansel, Henry Longueville. Metaphysics, Or, The Philosophy of Consciousness, Phenomenal and Real. Adam and Charles Black: 1860

Martin, Wayne. "Nothing more or less than logic: General logic, transcendental logic, and Kant's repudiation of Fichte's Wissenschaftslehre". Topoi 22(1): 29-39 (2003)

Marx, Karl. Grundrisse. 1857. Retrieved from https://www.marxists.org/archive/marx/works/1857/grundrisse/

"Theses on Feuerbach". 1845. Retrieved from https://www.marxists.org/archive/marx/works/1845/theses/theses.htm

Maybee, Julie E. Picturing Hegel: An Illustrated Guide to Hegel's Encyclopedia Logic. Lexington Books: 2009.

McDowell, John. Having the World in View. Harvard University Press: 2009

"Hegel's Idealism as a Radicalization of Kant". International Yearbook for German Idealism 5 (2007). Reprinted in (McDowell 2009)

Mind and World. Harvard University Press: 1994.

"Kant ist der Greatest". Information Philosophie 1: 24-31 (2000)

"Three Varieties of Naturalism" in Mind, Value and Reality Harvard University Press: 2001.

"Why is Sellars's Essay Called *'Empiricism* and the Philosophy of Mind'?" in Having the World in View. Harvard University Press: 2009.

McGosh, James and Dickie, George. Typical Forms and Special Ends in Creation. Robert Carter and Brothers: 1857

Melamed, Yitzhak. "Mapping the Labyrinth of Spinoza's Scientia Intuitiva" in J. Haag and M. Wild (eds.) Übergänge – diskursiv oder intutiv? Essays zu Eckart Försters *Die 25 Jahre der Philosophie*. Klostermann Rote Reihe: 2013.

Menn, Stephen. "Plato and the Method of Analysis". Phronesis 47 (3): 193-223 (2002)

Nassar, Dalia. The Romantic Absolute. University of Chicago Press: 2013

"Pure versus Empirical Forms of Thought: Schelling's Critique of Kant's Categories and the Beginnings of *Naturphilosophie*". Journal of the History of Philosophy 52 (1): 113-134 (2014).

Neander, Karen. "Teleological Theories of Mental Content". January 2012. Retrieved from https://plato.stanford.edu/entries/content-teleological/

Oman, John. The Problem of Faith and Freedom in the Last Two Centuries. Hodder and Stoughton: 1906

Parsons, Charles. “The Transcendental Aesthetic” in P. Guyer (ed.) The Cambridge Companion to Kant. Cambridge University Press: 1992.

Pearce, Trevor. “The Dialectical Biologist, circa 1890: John Dewey and the Oxford Hegelians”. Journal of the History of Philosophy 52 (4): 747-777 (2012)

Pinkard, Terry Hegel’s Naturalism: Mind, Nature, and the Final Ends of Life. Oxford University Press: 2013.

“Speculative *Naturphilosophie* and the Development of the Empirical Sciences: Hegel’s Perspective”. In G. Gutting (ed.) Continental Philosophy of Science. Blackwell: 2005.

Pippin, Robert. Hegel’s Idealism: The Satisfactions of Self-Consciousness. Cambridge University Press: 1989.

Hegel’s Realm of Shadows: Logic as Metaphysics in the *Science of Logic*. Chicago University Press: 2018.

“Reason’s Form” in K. Ameriks (ed.) The Impact of Idealism Volume 1. Cambridge University Press: 2013.

“You Can’t Get There From Here: Transition Problems in Hegel’s *Phenomenology of Spirit*” in F.C. Beiser (ed.) The Cambridge Companion to Hegel. Cambridge University Press: 1993.

Pluhar, Werner. Critique of Judgment translation notes. Hackett Publishing Company: 1987.

Posch, Thomas. “Hegel and the Sciences” in S. Houlgate and M. Baur (eds.) A Companion to Hegel. Wiley-Blackwell: 2015.

Quine, W.V.O. “Naturalism; or Living Within One’s Means” in Quintessence. Belknap Press:

1995.

"On What There Is" in From A Logical Point Of View. Harvard University Press: 1948.

"Two Dogmas of Empiricism" in From A Logical Point of View. Harvard University Press: 1951.

Rand, Sebastian. "Animal Subjectivity in Hegel's Philosophy of Nature". Eletronica Estudios Hegelianos 7 (12): 32-51 (2010)

From A Priori Grounding to Conceptual Transformation: The Philosophy of Nature in German Idealism. Unpublished dissertation. 2006.

"Hegel's Philosophy of Nature" in D. Moyar (ed.) The Oxford Handbook of Hegel. Oxford University Press: 2017.

"What's Wrong with Rex? Hegel on Animal Defect and Individuality". European Journal of Philosophy 23(1): 68-86 (2013)

Redding, Paul. "Hegel". August 2015. Retrieved from https://plato.stanford.edu/entries/hegel/

The Logic of Affect. Cornell University Press: 1999.

Richards, Robert. The Romantic Conception of Life: Science and Philosophy in the Age of Goethe. University of Chicago Press: 2004.

Riedl, Rupert. "A Systems-Analytical Approach to Macro-Evolutionary Phenomena". The Quarterly Review of Biology 52(4): 351-370 (1977)

Risse, Guenter. "Kant, Schelling, and the Early Search for a Philosophical 'Science' of Medicine in Germany". Journal of the History of Medicine and Allied Sciences 27(2): 145-158 (1972)

"Schelling, 'Naturphilosophie', and John Brown's System of Medicine". Bulletin of the

History of Medicine 50(3): 321-334 (1976)

Rödl, Sebastian. "Eliminating Externality". International Yearbook of German Idealism 5 (2007)

Self-Consciousness. Harvard University Press: 2007.

Rorty, Richard. Objectivity, Relativism, and Truth: Philosophical Papers. Cambridge University Press: 1990.

"Some American Uses of Hegel" in W. Welsch and K. Viewig (eds.) Das Interesse des Denkens Hegel aus heutiger Sicht. Wilhem Fink: 2003.

Rosen, Stanley. The Idea of Hegel's "Science of Logic". University of Chicago Press: 2013.

Rosewater, Mark. "Parallel Design". April 2015. Retrieved from https://magic.wizards.com/en/articles/archive/making-magic/parallel-design-2015-04-20

"Zen and the Art of Cycle Maintenance". July 2002. Retrieved from https://magic.wizards.com/en/articles/archive/making-magic/zen-and-art-cycle-maintenance-2002-07-08

Schelling, F.W.J. First Outline of the System of the Philosophy of Nature. Tr. K.R. Peterson. State University of New York Press: 2004.

"Further Presentations From The System of Philosophy" tr. M.G. Vater. The Philosophical Forum 32 (4): 373-397 (2001a)

Ideas for a Philosophy of Nature. Tr. E.E. Harris and P. Heath. Cambridge University Press, 1988. (Cited as "IPN")

"Presentation of My System of Philosophy" tr. M.G. Vater. The Philosophical Forum 32 (4): 339-371 (2001b)

Von der Weltseele. 1809. Retrieved from

http://www.zeno.org/Philosophie/M/Schelling,+Friedrich+Wilhelm+Joseph/Von+der+Weltseele

Schopenhauer, Arthur. The World as Will and Representation. tr. E.F.J. Payne. Dover Publications, 1966.

Sedgwick, Sally. Hegel's Critique of Kant: From Dichotomy to Identity. Oxford University Press: 2012

Sell, Annette. Der lebendige Begriff: Leben und Logik bei G.W.F Hegel. Verlag Karl Alber: 2013.

Sellars, Wilfrid. "Philosophy and the Scientific Image of Man" in R. Colodny (ed.) Science, Perception, and Reality. Humanities Press: 1962

Sgarbi, Marco. Kant and Aristotle: Epistemology, Logic, and Method. State University of New York Press: 2017.

Spinoza, Baruch. Ethics, Treatise on The Emendation of the Intellect, and Selected Letters. Tr. Samuel Shirley. Hackett Publishing Company, 1992.

Taylor, Charles. Hegel. Cambridge University Press: 1977.

Thompson, Michael. "Apprehending Human Form". Royal Institute of Philosophy Supplement 54:47-74 (2004)

Life and Action. Harvard University Press, 2008.

Van Fraassen, Bas. The Empirical Stance. Yale University Press: 2002.

The Scientific Image. Clarendon Press: 1980.

Vater, Michael and Wood, David. The Philosophical Rupture Between Fichte and Schelling: Selected Texts and Correspondence (1800-1802). State University of New York Press:

2012.

Wallace, Robert M. Hegel's Philosophy of Reality, Freedom, and God. Cambridge University Press: 2011.

Westphal, Kenneth. "Kant, Hegel, and the Fate of 'the' Intuitive Intellect" in S. Sedgwick (ed.) The Reception of Kant's Critical Philosophy. Cambridge University Press: 2000.

Wilson, Margaret. "Spinoza's Epistemology" in D. Garrett (ed.) The Cambridge Companion to Spinoza. Cambridge University Press: 1995.

Winfield, Richard Dean. Hegel's Science of Logic: A Critical Rethinking in Thirty Lectures. Rowman & Littlefield: 2012.

Wittgenstein, Ludwig. Culture and Value. Tr. P. Winch. Univerity of Chicago Press: 1984.

Wood, Allen. Kant's Ethical Thought. Cambridge University Press: 1999.

Žižek, Slavoj. Less Than Nothing: Hegel and the Shadow of Dialectical Materialism. Verso: 2013.

Zuckert, Rachel. Kant on Beauty and Biology: An Interpretation of the 'Critique of Judgment'. Cambridge University Press: 2010.

Zumbach, Clark. The Transcendent Science: Kant's Conception of Biological Methodology. Springer Science and Business Media: 2012.

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Magna Cum Laude

Dissertation:

"Hegel's Critique of Kant's Philosophy of Biology", chair Elisabeth Lloyd; Gary Ebbs, Sandra Shapshay, Allen Wood also on dissertation committee.

Abstract: Kant's account of teleology in the Critique of Judgement denied that we could ever have genuine knowledge of living beings; Kant demoted teleological thinking to a heuristic status (albeit a necessary one). Many of Kant's Idealist successors reacted against this skeptical move, including Goethe and Schelling. Hegel offers the best account of how to think about thoughts of living beings, and his Science of Logic and Philosophy of Nature offer many insights into how we should understand the special nature of living beings in nature and our thoughts about them. My dissertation offers an account of these insights in historical and systematic context.

Honors and Fellowships:

Nelson Dissertation Year Fellowship, Fall 2017-Spring 2018
Research Incentive Fellowship, Spring 2014
Nelson Summer Fellowship, Spring 2013
Indiana University PhD program, fully funded
University of Chicago MAPH half-tuition fellowship
University of Texas Dean's Academic Excellence Scholarship
David Proctor Scholarship Endowment2/3 tuition scholarship
Southern Nazarene University, Bresee Scholar, full tuition scholarship, 2002-2007

Phi Delta Lambda Honor Society, 2007

Selected Employment:
Research Assistant for Elisabeth Lloyd, Indiana University, Fall 2014-Spring 2015
Associate Instructor, Indiana University, Fall 2010-Spring 2014, Fall 2015-Spring 2021

Publications:
"Hegel's 'Idea of Life' and Internal Purposiveness", *History of Philosophy of Science*, Volume 8 Issue 2, pp.376-408 (2018) DOI: 10.1086/698659
"On Origins and Species: Hegel on the Genus-Process", *Hegel-Bulletin* Volume 1, Special Issue 3, December pp.426-445 (202) DOI: 10.1017/hgl.2020.2
"Rehabilitating Ideas: The Importance of Hegel on the Ontological Argument", under review at *European Journal of Philosophy*

Presentations:
Commentator on Jered Janes, "An Husserlian Critique of McDowell's Conceptualism", Indiana Philosophical Association, Fort Wayne, Indiana, October 2014
"On the Very Idea of a 'Non-Metaphysical' Reading of Hegel on the Ontological Argument",
Grad Student Colloquium, Bloomington, Indiana, November 2014
Grad Student Colloquium, Bloomington, Indiana, April 2015
Conference on Contemporary Debates in German Idealism, Xavier University, April 2015
"Kant and Hegel on the Logic of Life", Nature & the Philosophy of Nature in German Idealism and Romanticism Masterclass, University of Sydney, June 2015
Indiana University History & Philosophy of Science Conference, March 2016
Society for German Idealism & Romanticism Conference, University of Chicago, October 2016
Commentator on Andrew Roche, "Psychological Readings of Kant's Second Analogy and the Representation of Causality", Indiana Philosophical Association, Earlham College, November 2015
"Living Universals in Nature: Sex, Death, and Hegel", Lehigh Conference on the Long 19th Century, October 2016
"Why Hegel's Philosophy of Nature?", Nelson Lecture, Spring 2018
"Why Hegel's Philosophy of Nature?", APA Eastern, Winter 2020

Areas of Specialization:
Kant, Hegel, History of Philosophy of Biology, Nineteenth Century, Early Modern

Areas of Competence:
Early Analytic (Frege to Quine), American Pragmatism, Epistemology, Philosophy of Science, Ancient Philosophy

Research Interests:
Hegel
Kant
German Idealism

Philosophy of Science (especially philosophy of biology)
Early Analytic (Frege to Wittgenstein)
Epistemology
Pragmatism
Spinoza

Service

Chaired session, Society for the Study of the History of Analytic Philosophy conference, Indiana University Bloomington, May 2013
Chaired session, "Environmental Ethics & Aesthetics" conference, Indiana University Bloomington, May 2016
Chaired session, North American Kant Society Biannual Meeting, Emory University, May 2016
Chaired session, Joint Meeting of the North American Kant Society/Society for German Idealism and Romanticism, Stanford University, October 2017

Editorial Activities:

Publisher: Rowman & Littlefield, feedback on "The Annotated Kant: Groundwork for the Metaphysic of Morals"

Professional Memberships:

Society for German Idealism & Romanticism, Fall 2016-present
North American Kant Society, Fall 2015-present
Hegel Society of America, Fall 2016-present
American Philosophical Association, Fall 2017-present

Graduate Coursework:

University of Chicago:

"Foundations of Interpretive Theory", MAPH Staff, Fall 2008
"Heidegger's Being and Time", John Haugeland, Fall 2008
"Contemporary Analytic Philosophy", Benjamin Callard, Fall 2008
"Philosophy of Action", Anton Ford, Fall 2008 (audited)
"Kant's Critical Philosophy", Robert Pippin, Winter 2009
"Twentieth Century Moral Philosophy", Piergiorgio Donatelli, Winter 2009
"Intermediate Logic", Kevin Davey, Winter 2009
"Active Thoughts", Irad Kimhi, Winter 2009 (audited)
"Spinoza's Ethics", Steven Nadler, Spring 2009
"Intentional Objects", Jocelyn Benoist, Spring 2009

Indiana University:

"The Internal and the External in Epistemology", Mark Kaplan, Fall 2010
"Rationalism and Sentimentalism in Early British Ethics", Kate Abramson, Fall 2010
"Testimony", Adam Leite, Spring 2011
"Frege", Joan Weiner, Spring 2011
"19th Century German Aesthetics", Sandra Shapshay, Spring 2011
"Social Ontology", Fred Schmitt, Fall 2011

"Survey of History of Science to 1750", William Newman, Fall 2011
"Critique of Pure Reason", Allen Wood, Spring 2012
"Virtue Ethics", Rega Wood, Spring 2012
"Quine and Davidson", Gary Ebbs and Kirk Ludwig, Spring 2012
"Survey of the Philosophy of Science", Elisabeth Lloyd, Fall 2012
"Renaissance Magic and Natural Philosophy", William Newman, Spring 2013
"Philosophy of Biology", Elisabeth Lloyd, Spring 2013
"Organisms, Organicism, Vitalism Mechanism", Jutta Schickore, Fall 2013, (audited)
"Reading German for Graduate Students", Staff, Spring 2014
"Pragmatism and the Philosophy of Science", Elisabeth Lloyd, Spring 2014 (audited)
"Hume's Treatise", Fred Schmitt, Fall 2014 (Audited)
"Kant's Third Critique and its Legacy", Sandra Shapshay, Fall 2015 (Audited)
"History & Philosophy of Comparative Cognition", Colin Allen, Fall 2015 (Audited)
"Aristotle on Perceptible Substance: Metaphysics Z and H", Pieter Sjoerd Hasper, Spring 2016 (Audited)

Reading Group/Workshop Participation:
University of Chicago: Philosophy of Mind Workshop, Fall 2008-Spring 2009
Indiana University: "Symparanekromenoi" Kierkegaard Reading Group, Fall 2010-Fall 2011
McDowell Reading Group, Fall 2010
Marx Reading Group, Fall 2011
Strawson's "Individuals" Reading Group, Fall 2012
Rödl's "Self-Consciousness" Reading Group, Spring 2013
"Between Saying and Doing" Reading Group, Fall 2013
Enactive Cognition Reading Group, Fall 2014 - Spring 2015
Biological Studies Reading Group, Fall 2014-Fall 2017
Davidson Locke Lectures Reading Group, Spring 2017
"Natural Goodness" Reading Group, Summer 2019

Courses Taught:
Introduction to Philosophy (Plato, Descartes, Kant): Spring 2014, Spring 2016, Spring 2021
Introduction to Ethics (Plato, Kant, Anscombe, Selected Topics): Fall 2015, Fall 2016, Spring 2017
Introduction to the Philosophy of Art: Spring 2020.